THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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THE IRON AGE

New York, Thursday, January 18, 1906.

The Bliss Automatic Press for Wired Can Tops.

There are many ways of opening cans. The first and oldest is by the use of the ordinary can opener, which cuts a jagged opening around the top or along the side. This tool is reliable, as it will always do the work, but at best the process is crude. A neater way is provided for in the can itself by weakening the body along two parallel lines about ¼ inch apart, just below the top. The two lines are cuts or scores made in the tin, so that when the projecting tip of the strip is placed in a key and the latter turned the body of the can will be separated along the lines as the strip is wound upon the key. The theory is good, but it has been found difficult to make the score uniform because the thickness of the sheets varies both as to the iron and the tin coating, and a score the right depth on one sheet will be too deep on another and not deep enough on a third. The process when it works satisfactorily is intended to leave a clean edged body, but frequently the weak link is weak only in spots and the strip runs off the marked track and breaks.

A can top has been introduced that has its lower edge turned in to form a groove, and in this groove is placed a wire, one end of which projects outside the top about 1 inch. This is grasped with a key or wrapped around a nail and pulled and the wire separates the tin along the groove all the way round. A very interesting machine has been perfected by the E. W. Bliss Company, Brooklyn, N. Y., for making these tops. While the machine itself, considered merely as a press for sheet metal work, has several new features, the most interest attaches to the method of introducing the wire in the groove around the top. The accompanying half-tones, Figs 1 and 2, show front and rear views of the press and the outline drawings, Figs. 3 to 7, show the work performed by the successive dies.

The press has four independently adjustable dies carried by a cross head moving in guides on the front of the frame. The cross head is attached to the ends of a pair of walking beams mounted on top of the housing. To their rear ends are secured connecting rods actuated by eccentrics on a shaft driven by pinion and gear from the main driving shaft. By this arrangement the principal and heaviest parts of the machine are placed low and all the actuating mechanism is within easy reach.

The first operation is the cupping of the disk to the shape indicated in Fig. 3. This is done upon a separate press. The blanks are placed upon the table A, which is revolved by a round belt from the shaft B. This guides the blanks in single file under the first die, which turns the edge of the cup slightly inward, as shown at *a*, Fig. 4, ready for the final forming of the groove for the wire. The next operation sinks the key depression and cuts the notches *c c* in the edge, as shown in Fig. 5. At each forward step of the blank it is grasped between the branches of two forks, arranged with their tops toward each other. The grips are carried by a slide moving across the face of the machine and actuated through the lever D and grooved cam C on the shaft B. The third operation introduces the wire into the groove and cuts it off, so as to leave about 1 inch projecting, as indicated at *f*, Fig. 6. It is passed through one of the notches *c*, when it encounters a curved die that guides it into the groove around which it passes. The wire is fed forward by rollers. It is evident that it would be impossible to push any considerable length of wire if it were not supported in such a way as to prevent its bending. In this case the wire, immediately upon leaving the feed rolls, enters a small tube, through which it is pushed to the entrance

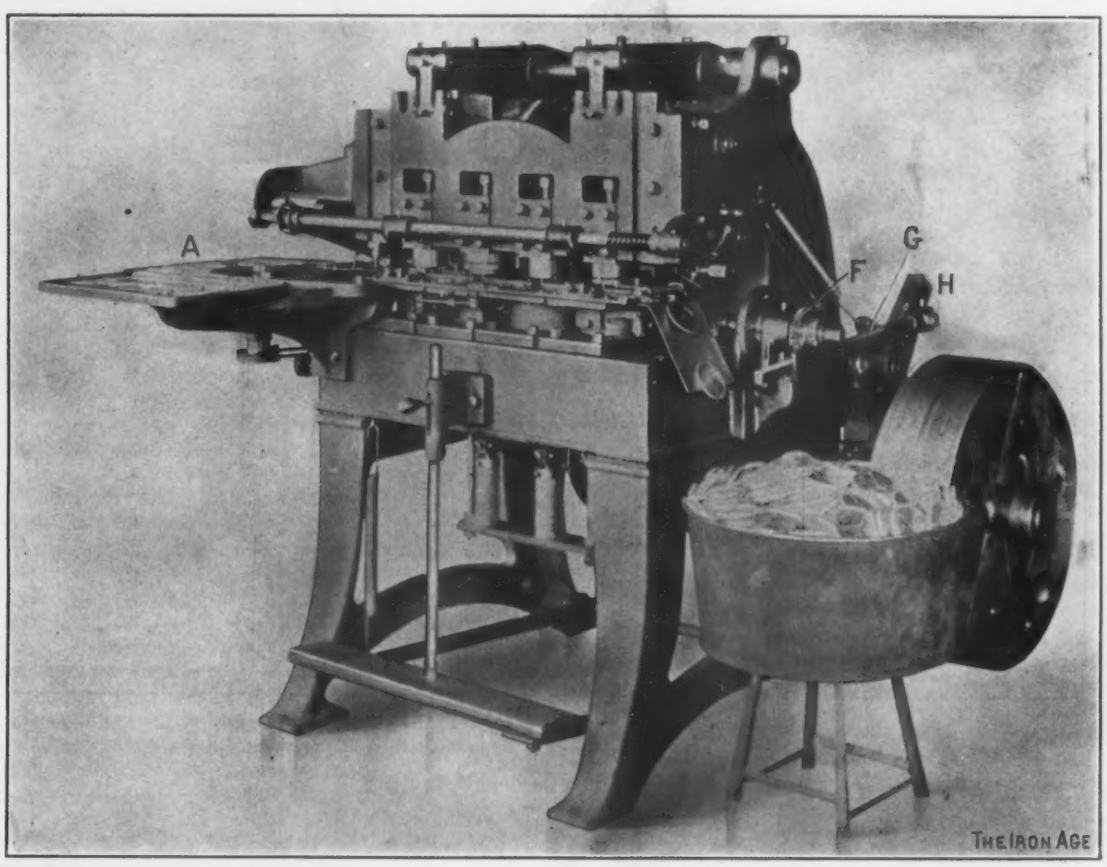

Fig. 1.—Front View of Press for Making Wired Can Tops, Showing the Wire Actuating Mechanism at the Right.

of the groove. Once entered the groove itself provides the support needed.

The movement of the wire is intermittent. The rolls turn to feed a length of wire sufficient for one top and then stop until another top has moved into position. On one end of the shaft carrying the rolls is a pinion, F, with which the rack G engages. The pinion is mounted ratchet fashion, so that its shaft is turned when the rack moves in one direction and is idle upon the reverse movement of the rack. The rack is moved by the arm H attached to one end of the shaft B. The length of the movement of the rack and consequently the length of the wire fed to the top can be changed by shifting the rack connection with the arm H. This adjustment is provided in order to meet the requirements of tops of different sizes.

An automatic stop is provided to prevent the feeding of the wire in case there should be no top in position to receive it. The final operation bends the projecting wire down close to the side of the top, as shown in Fig. 7.

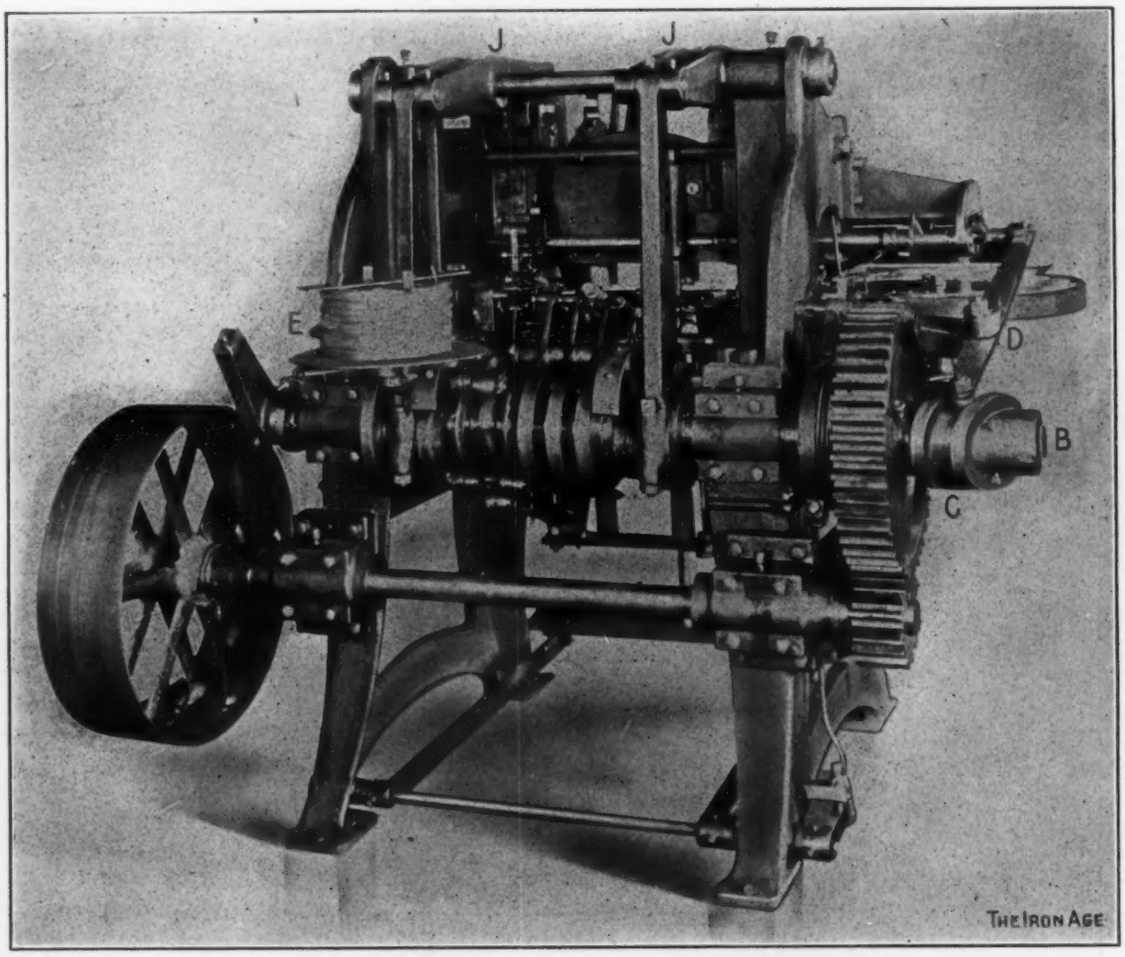

Fig. 2.—Rear View, Showing Blank Feeding Mechanism at the Right.

Fig. 3.—Blank as Fed to the Machine.

Fig. 4.—Edges Turned in Ready for Grooving.

Fig. 5.—Key Seat Sunk and Notches Cut for Wire.

Fig. 6.—Groove Turned and Wired.

Fig. 7.—End of Wire Bent Against Side of Top.

An automatic stop is provided to prevent the feeding of the wire in case there should be no top in position to receive it. The final operation bends the projecting wire down close to the side of the top, as shown in Fig. 7.

To facilitate cleaning and repairing cars in the winter the new car barn of the Twin City Rapid Transit Company, St. Paul, Minn., which will be heated by the Sturtevant system, is to be arranged so that the air will be discharged into the pits and so rapidly melt snow and ice from the running gear.

The thirty-sixth annual catalogue of the Worcester Polytechnic Institute, Worcester, Mass., has been issued. It contains 210 pages. An interesting feature of this institution's annual publications is the detail given relative to the Worcester Polytechnic workshops, these being the first to be established as adjuncts of the training of the mechanical engineer.

The Coal Trade.

BY FREDERICK E. SAWARD.

I have known *The Iron Age* and many of its managers for over 30 years and have with others looked up to it as the chief among class papers. Looking over its issue for January 4, in which it celebrated its semicentennial, the thought came to me that the growth of the coal trade has been of moment in the period covered—for 1855 showed a soft coal product for the United States of 7,000,000 tons and of anthracite 6,600,000 tons, while in 1905 the figures were 40 times as great for the former and 10 times for the latter. This is another evidence of the fact that industrial development has grown far and away beyond all anticipation. So much for reviews of the past. What will the next half century show us? In all human probability nearly as great progress.

The Anthracite Situation.

Now a few words as to current conditions in the coal trade: As to the hard coal end, which has a bearing on soft coal, for a high price of the former leads to an advance in the price of the latter, it may be said that there is a vast amount of surmise and prophecy as to the possibility of an anthracite strike after April 1, but the issue is altogether beclouded. The outcome is not yet one to be accurately foretold, but to those who take a calm view of the situation there is more of peace in the outlook than there was in any preceeding year when a basis was to be arranged. No one is breathing defiance, and this is a point of great significance. Both sides are more inclined to respect the views of the other as the years go by; this will be admitted by the leaders of each. One of the interesting features in the present situation is that the operators are disposed to meet their employees. This surely is an indication of a peaceable disposition on the part of the operators, and perhaps forecasts the result so much to be desired—a continuance of the present agreement in its main features. An interesting point in all this labor discussion, so far as the anthracite situation is concerned, is that the president of the national organization is making his power for conservatism felt in conference with the district presidents of the hard coal regions.

Much has been said about mild weather during the past few weeks, and in view of this condition it is doubtful if the first quarter of 1906 will turn out much above the average hard coal tonnage of the preceding four years—say, 13,400,000 tons—and this estimate of tonnage is helped by the splendid showing of the first quarter of 1905, which ran over 15,245,000 tons.

The Bituminous Trade in Good Condition.

There is not so much strike talk in this branch of the fuel industry either, and I find some usually well-posted people at Pittsburgh claiming that no idleness will take place in the tri-State district this spring. In the meantime there is a very good demand for fuel, and the first heavy fall of snow, which might impede prompt deliveries, would make an active market. There is a good demand for soft coal through New England, and prices are rather firmer for good coal, as there is the expectancy of winter storms now coming on. At some of the loading ports there is a freer movement, owing to the open weather having given an opportunity for the better car-handling by the carriers. At the more southern points of loading there is still delay and the number of vessels waiting does not decrease materially. It is a notable feature that the total business out of Baltimore last year showed an increase of something like 50 per cent. over the preceding year. It seems a peculiar fact that many of the towns and cities in the West are already complaining of a short supply of coal, but that portion of our country is growing at a very rapid rate and something extra is called for in the matter of a fuel supply. The reports from the head of the lakes show that there is a decidedly short tonnage with which to go into an ordinary winter campaign.

Ambitious Projects for Trade Expansion.

The scarcity of coal in the Northwest is of great consequence to the Pittsburgh district and I am advised that the Pittsburgh Coal Company, the United Coal Company, the Pittsburgh-Westmoreland Coal Company and about all other of the more considerable operators, as well as some of the smaller ones, will enlarge their output capacity during the year and add to their equipment in various ways to effect economies and facilitate a more satisfactory transaction of business. There are some ambitious campaigns being perfected for expansion of trade in the lake territory, up Buffalo way, down south and toward the seaboard, that mean that the stronger position in which the coal trade of the Pittsburgh district now is will bear monetary fruit in a number of ways. The attitude of aggressiveness is due to the fact that to a degree never before known the coal-producing industry of this prolific region is now directed by strong men of great business energy, supported by large capital and animated by a laudable desire to bring the coal-mining industry up to the standard of steadiness and order that has been realized in the iron and steel industries. It is imperative that the enormous capital now invested shall return a profit that will justify the hazards that necessarily surround coal mining operations. It is now recognized that mining properties are unlike manufacturing plants, in that a factory building stands as a more or less permanent asset, while every ton of coal taken out of a mine leaves only a hole, the asset having been taken out and converted into merchandise. Not only this, but every foot of distance away from the mouth of the mine means additional expense in the way of increased haulage cost from face to tipple and in additional safguard expense that must be charged against every ton of coal remaining in the mine.

Present Market Conditions.

The open weather made shipments from cars to vessels better in the holiday season and for a few days after, so that the New York harbor trade on bituminous coal has been extremely light so far as new business is concerned, although shipments on contracts have been heavy. Prices are ruling from $2.70 per gross ton on cheaper West Virginia grades to $3 for the better South Fork grades, at New York. Georges Creek is heard of again at considerable recessions from the asking price of a month ago. The situation at Southern ports is as serious as at any time this season, there still being a large fleet of vessels and barges waiting for cargoes. The bunker business is checking the accumulation, however, an unusually large number of steamers calling and taking a large part of the coal arriving. Some vessels have been on the waiting list for several weeks.

In this time of statistics for the year just ended there are many items worthy of note, but a striking feature is the total of the Pennsylvania Railroad Company's coal and coke tonnage, which came to 46,000,000 net tons carried last year, a gain of 6,000,000 tons. What this means may be gathered from the fact that no State is credited with such a tonnage of production—barring Pennsylvania. Illinois mines 37,000,000, West Virginia 32,000,000, Ohio 23,000,000 and Alabama 12,500,000 tons in a year, and that is the list after Pennsylvania. Put in another way the Pennsylvania Railroad coal and coke tonnage last year was greater than the yearly combined coal outputs of the States of Indiana, Kentucky, Colorado, Iowa, Kansas, Wyoming, Maryland and Tennessee. Surely that is an item of the coal industry worthy of note.

As to the increase in the population of Chicago in 1905, something is indicated by the statistics of traffic on the elevated lines. The Northwestern Elevated carried 28,238,621 passengers last year as against 24,933,313 in 1904, an increase of 9.89 per cent. The South Side Company carried 32,959,752 passengers, an increase of 8.47 per cent. The Metropolitan Elevated carried an average of 124,271 passengers daily against 114,232 in 1904, a gain of 8.8 per cent.

Factory Education.

The necessity of providing agencies for training boys to become mechanics, in addition to the restricted opportunities afforded in the trades as now conducted and controlled, is receiving widespread attention. The problem is a difficult one but it is being handled in some fashion in nearly every industrial community. Related to this question, and fully as important if not more so, is the matter of providing the training through which can be secured the material for expert superintendence. The old workshop in which a man of parts developed into a well rounded mechanic, able to instruct and direct others, has largely given way to the factory with every hand working at some specialty. In such an establishment the conditions are usually unfavorable for the development of those qualifications which fit a man for superintendence. Here the factory system breaks down. For its own advancement the system needs a competent supply of men well qualified to direct others and it fails to produce them. Discussing this point in an article in *Machinery* on "Factory Education," O. M. Becker says:

"Most managers have experienced the difficulty of getting the right man for the place, especially if the place were one requiring considerable knowledge of the business as a whole. An industry is lacking in some respects if it cannot to a considerable extent train up the men who are later to be the directing forces in it. Most businesses are not now doing it. Nor on the basis of present systems is it possible to be done.

"There are evidently two methods of attack in the solution of this problem; increasing facilities for industrial and technical education, that is, for the adequate training of workers for their work, and a modification of the piecework system of labor. The latter may be neglected in this discussion, for the reason that as yet there appears to be at hand no practicable substitute that is economically as satisfactory. There remains, then, the other alternative, that of education. Factory education, or perhaps better stated the education of factory operatives, is not an untried theory of the idealist. Level-headed men have long seen the economic necessity for something of the sort, and as long ago as the time of Robert Owen factory schools were more or less effective agencies in the development of certain industries.

"The old apprentice system, inefficient as it was from the modern point of view, was one manifestation of the idea and a powerful factor in the promotion of industrial progress. Its wastefulness of time and the development of the specialized machine tool have led to its practical disappearance, unfortunately leaving no organized means for the accomplishment of its purposes in its stead. A few far-sighted employers of large interests, to their great advantage, as they stoutly maintain, have retained the apprenticeship system in a modified form, and make it part of an educational system conducted along with and as a part of their manufacturing plants. The Baldwin Locomotive Works, the Brown & Sharpe Manufacturing Company, the General Electric Company, and R. Hoe & Company may be mentioned as notable examples in this country. The school conducted at the Hoe printing press works for more than thirty years has developed to such an extent that it is recognized as one of the leading private trade schools in the country. From it go out, usually after some years' additional service with the company, men who take responsible positions in manufacturing plants all over the country."

Tennessee Properties Change Ownership.—Graham Macfarlane has bought the Dover and Bear Spring cold blast charcoal furnaces in Stewart County, Tennessee, also the ore rights and wood reserves of the Cumberland River Land Company, and will continue to manufacture the Dover cold blast iron, which has been on the market since 1829. He has sold one-half his interest in the Red River Furnace Company to Guy R. Johnson, who will have charge of the operation of Helen Furnace at Clarksville, Tenn. Mr. Macfarlane will also act as consulting engineer on the Southern coal and iron questions.

Electrolytical Galvanizing.

BY HENRY I. WHITE.

Within the past two years increased attention has been given to cold zinking or electrolytic galvanizing. This is not a new process, as it had been in successful use a long time previously, coating all kinds of iron castings, tubes, wire, sheets, etc. More particularly, however, has attention been given to this special branch of industry in Germany, Italy, England, Austria and Hungary. In the last named country the researches of Czermay have attracted considerable interest. In government yards, various shipbuilding establishments, tube, and wire works the results obtained have been so economical and gratifying to the users that hot galvanizing has been suspended.

The results that have been accomplished by Czermay on the theory of neutral baths have been amply confirmed by the splendid work accomplished by Prof. C. F. Burgess of our own country. They demonstrate that on the one hand electrolytic zinking resists atmospheric and other corroding influences much better than hot galvanizing, while on the other hand the cold process dispenses with the employment of the dross and skinning man and the man who is needed to keep the pots hot all the 24 hours, and further avoids the inevitable loss of pots and metal.

In order to convince parties who were more or less interested in this process, severe tests were made for lengthy periods on pieces of various articles coated by the cold process, such as wide variations of temperature, carbonic acid, sulphurous acid, and humidity. To make these tests conclusive an atmosphere containing 15 per cent. of carbonic acid (CO_2) and 12 per cent. of sulphurous acid (SO_2) was artificially created, while the greatest proportion of these acids in the ordinary atmosphere does not exceed 0.03 per cent. of CO_2 and 3 per cent. of SO_2 even under the every worst conditions. The mechanical and chemical tests described below were made on articles galvanized by the hot process in England and Germany and those treated electrolytically came from different works operating under the Czermay process.

Mechanical Tests.

A. ROOFING PLATES.

1. *Bending and Folding.*—The corners were turned down and the metal was beaten flat on itself with a wooden hammer; then reversed and beaten flat on itself at the opposite side. Work was done on both sides at the same location. Other sheets were folded, singly and doubled.

2. *Torsion Tests.*—The sheets were cut into small strips, then wound spirally.

3. *Tension Tests.*—The sheet strips were slowly stretched between jaws to 10 per cent. above the original length.

The results were as follows:

Table I.

Article.	Bending and Folding.	Torsion.	Tension.
A. Sheets coated by hot process.	First bending, good. Second bending at same location, zinc scaled off. Single folding, good. Double folding, zinc came off in places.	Showed scaling on zinc.	Zinc flaked off.
A. I. Sheets coated cold, electrolytically.	After two bendings and after two foldings on each side, the sheet showed no signs of failure.	No scaling at all.	Zinc kept on the stretched pieces.

B. TUBING.

1. *Bending Test.*—Tubes ½ inch to 1½ inches outside diameter were fixed at one end in a vice and the opposite end was bent sharply around the vice.

2. *Hammering Test.*—The tubes were hammered at the point of weld until they split.

3. *Inside Test.*—The tubes were sawed lengthwise to show the interior coating.

The results were as follows:

Table II.

Article	Bending	Hammering	Interior
B. Tubes coated by hot process.	Stood no bending. See remarks.	Broke like cast iron. Zinc scaled off in places.	No coating in many places.
B. I. Tubes coated cold electrolytically.	Showed perfect coating both inside and outside.	Separated at the point of weld in a straight line but zinc adhered.	All sizes showed perfect coating inside.

C. IRON AND STEEL WIRE.

1. *Bending Test.*—All the wire, No. 12 gauge, was wound spirally with force into a very tight loop, then unwound and reversed into a loop. Other pieces were wound around their own diameter in tight spirals.

2. *Torsion Test.*—The stretched wires were turned around their own axes and deformed.

3. *Tension Test.*—The wires were stretched 20 per cent. above their original length.

4. *Hammering Test.*—The wires were flattened to one-half their original diameter.

The results were as follows:

Table III.

Article	Bending	Torsion	Tension	Hammering.
C. Wire coated by hot process.	First bending good. Second bending, zinc partly disintegrated.	Zinc scaled off.	No zinc on elongated pieces.	No zinc on hammered pieces.
C. 1 American and English steel wire coated by hot process and wiped.	First and second bendings very good. When wound spirally zinc came off at places.	Zinc scaled in spots.	Zinc adhered on elongated portions.	No zinc on hammered pieces.
C. 2 Wire coated cold, electrolytically.	First and second bendings faultless; spirals also; zinc adhered.	Zinc coating perfect.	Zinc on all elongated portions.	Thin zinc coatings on hammered portions.

After each test the respective pieces were dipped for a moment in a solution of sulphate of copper, then rinsed in water and wiped dry, in order to determine on the coppery places the exact extent of the zinc disappearance.

Parallel tests with black and galvanized tubes of the same make were conducted, which showed that the tubes galvanized by the hot process had undergone a molecular change in the structure of the iron, probably due to rapid cooling after subjection to a high temperature. This had the effect of making the tubes brittle, and in a galvanized state they would not stand the bending and hammering tests, whereas in the electrolytic process the iron suffered no such deterioration.

The inside coating of the tubes showed serious defects in the case of the hot galvanized, which became more apparent in tubes of smaller diameter, where, with the exception of small lists and streaks of molten zinc, no inside coating could be found; whereas all the tubes galvanized electrolytically showed in every case a faultless and complete inside coating.

Chemical Tests.

The tested pieces consisted of strips cut from the sheets, sections of the tubes cut from the center, and pieces of wire cut from the coils.

It should be stated that the method generally in use for effecting rapid corrosion gives no indication as to the durability and resistance to corrosion of galvanized articles when exposed to atmospheric action. The immersion in a saturated solution of sulphate of copper, or in a solution of normal sulphuric acid simply shows to what degree these sulphates attack and dissolve the zinc. Since these sulphates are not present in the air, no conclusion can be formed as to the corrosive action of the atmosphere on galvanized iron.

The above mentioned tests are all the more misleading, as iron coated with lead, tin, or nickel will stand any number of such immersions without the steel or iron appearing, although the three metals named, in consequence of their electro-negative nature, afford no protection against corrosion, and goods coated with them, when exposed to the action of the air, corrode very quickly. It was thought proper therefore to provide such tests and to expose the tested articles to such influences as really prevail in the atmosphere, which are variation of temperature and the presence of carbonic acid, sulphurous acid, and humidity. These results are given in Table IV.

Remarks on the Above Results.

The articles galvanized by the hot process showed a change during exposure—namely, a blackish appearance.

After exposure in the apparatus, all samples were further exposed to the action of air in a works yard.

A, B and C, after three weeks' exposure, bore traces of scaling on the parts where the zinc was still visible, through corrosion from the inside to the outside.

C 1 was entirely rusted after two weeks.

A 1, B 1 and C 2 showed on the places where no dipping had taken place that the surface was intact or a perfect zinc coating remained.

This demonstrated the value of the testing method.

It is interesting and instructive to compare the results of dipping C 1 in a fresh state and after it had been exposed. In the fresh state 2¼ dippings were obtained, after which the largest part of the wire showed a copper coating. But after it had been exposed the zinc was totally eaten away, and what remained of the coating was lead and other impurities, which, untouched by the sulphate of copper, could not protect the underlying steel wire from corrosion in 14 days when exposed in the fresh air.

The above experiments clearly demonstrate the worthlessness of the usual dipping test.

Conclusions.

The above tests prove convincingly that steel and iron articles coated by the electrolytical process are superior to those galvanized by the hot process in their resistance to mechanical as well as to atmospheric action.

1. Whereas, in the hot process, in consequence of the unavoidable impurities of the zinc large quantities of zinc must be applied to insure protection against corrosion, a very much thinner electrolytical zinc deposit will equally well and even better protect the goods because of its chemical purity.

2. In the hot process the larger quantities of zinc and the unevenness of the coating injure the solid adherence, and since sheets, tubes and wire are worked up when used

a premature corrosion takes place on the worked up spots. In the last few years an effort has been made to overcome this serious drawback by the wiping process, especially in the case of wire. A certain economy in the use of zinc is effected and greater uniformity and adherence of the coating are obtained (see C 1 in Table III of mechanical tests), but very much to the detriment of protection against corrosion, as the chemical tests will prove. The tested wiped wire was obtained from English and American works of world-wide repute, and it is clearly demonstrated by these tests that notwithstanding their bright appearance and greater flexibility they most decidedly are not proof against corrosion, as many consumers have found out to their cost.

3. In consequence of the use of ammonia and chloride of zinc, these being unavoidable in the hot process, the coating corrodes in case of mechanical injury, and the combined salts cause corrosion from inside to outside, notwithstanding the thick zinc coating, which, as shown in the tests, stood a high number of immersions.

None of these defects appear in electrolytical galvanizing, which for these reasons alone is preferable to the hot process. It is, however, a matter of great importance that the solution used in electrolytic baths be of a nature to give a really nonporous, consistent and durable coating, unadulterated by deleterious metals and strong acids, which will in every case cause corrosion, as explained above.

Table IV.

Article	Average weight of zinc deposit.	Minutes immersed before exposure.	Remarks.	Minutes immersed after exposure.	Remarks.
A. Sheets coated by hot process.	0.350 oz. per square foot single surface.	6	After immersion zinc remained in some places, with numerous black spots.	3	Same as in Col. IV., only the number of black spots considerably increased.
A. 1. Sheets coated cold electrolytically.	0.215 oz. per square foot single surface.	4	After immersion coherent zinc coating with exception of edges.	2⅛	Same as in Col. IV.
B. Tubes coated by hot process.	0.337 oz. per square foot surface.	Outside 4⅛—5⅛ Inside ⅛—1⅛	Inside dippings refer to tubes ¾-in. and upwards only. Those of smaller diameter showed no zinc after ⅛ minute.	Outside 2 Inside 0	Zinc adhered on the outside, and black spots inside; no trace of zinc with exception of pieces of list.
B. 1. Tubes coated cold electrolytically.	0.219 oz. per square foot surface.	Outside 5 Inside 4	After immersion zinc in places.	Outside 3¼ Inside 2¼	Same as in Col. IV.
C. Wire coated by hot process.	0.550 oz. per pound.	4	After immersion zinc in places on dipped spots.	2	Same as in Col. IV.
C. 1. Wire coated by hot process and wiped.	0.30 oz. per pound.	2¼	After immersion zinc in places on dipped spots.	6	After first immersion no trace whatever of zinc, but no copper skin even after sixth immersion.
C. 2. Wire coated cold electrolytically.	0.20 oz. per pound.	2	After immersion zinc in places on dipped spots.	1⅛	Same as in Col. IV.

All the above tests were made on a commercial scale at works where the Szermay process is in operation. Materials galvanized under this process have been exposed for years and are to-day in perfect condition.

Through the courtesy of the Compressed Steel Shafting Company, 393 Dorchester avenue, Boston, Mass., we are in receipt of a copy of the Wareham *Times*, published at Onset, Mass., January 6, in which an interesting historical account is given of the passing of the old mill site at King's Furnace, near Onset, to a use for decidedly different purposes from those to which it had long been devoted. The statement is made that on this site was erected the first hollow ware factory in New England and that it was the fifth of the iron works to be started in that part of the State. The original operators who built the dam at that place to supply power bound themselves by a unique agreement under date of February 25, 1723-4, which is still in existence. A blast furnace was put up which began operations in 1724 and the iron made was run directly into molds for pots and kettles. Bog ore was used from the immediate vicinity. The blast furnace ran for many years.

The New England Foundrymen's Association.

The annual meeting and tenth anniversary of the New England Foundrymen's Association was held at the Exchange Club, Boston, Wednesday evening, January 10, with a large attendance, 81 members and guests enjoying the excellent dinner and the interesting exercises which came afterward.

The retiring president, John Magee, occupied the chair during the business meeting, at which the following officers were elected for the year: President, Walter B. Snow, B. F. Sturtevant Company, Hyde Park, Mass.; vice-president, William H. Bense, Kinsley Iron & Machine Company, Canton, Mass.; treasurer, George H. Lincoln, George H. Lincoln & Co., Boston; secretary, Fred F. Stockwell, Barbour-Stockwell Company, Cambridge, Mass. Executive Committee of five: Henry A. Carpenter, A. Carpenter & Sons Foundry Company, Providence; H. F. Arnold, American Tool & Machine Company, Boston; Charles J. Caley, Russell & Erwin Mfg. Company, New Britain, Conn.; Arthur Gibby, Mechanics' Iron Foundry, Boston; H. E. Wetherbee, James Hunter Machine Company, Boston.

Announcement was made of the death of M. J. Dyer, Valley Falls, R. I., and a committee consisting of Samuel M. Nicholson, Henry A. Carpenter and A. J. Miller, all of Providence, was appointed to prepare resolutions.

After dinner President Snow introduced Henry A. Carpenter as the toastmaster, who met the requirements most acceptably. He congratulated the association upon its growth, declaring it to be the pioneer of the local foundrymen's associations and responsible for the formation of the national body. Eugene N. Foss, head of the B. F. Sturtevant Company, was introduced as the speaker of the evening and made an interesting address on the question of reciprocity. George H. Gibby, Boston, gave an historical sketch of the association, showing its rapid progress in numbers and in influence. The meeting was altogether successful, constituting a fitting anniversary celebration.

Customs Administration Reforms.

WASHINGTON D. C., January 15, 1905.—The Ways and Means Committee will shortly report to the House three bills of great importance to importers in all lines and especially to the iron and steel trade. These measures include a comprehensive revision of the principal sections of the customs administrative act of 1890, the consolidation and reorganization of customs collection districts and the licensing of custom house brokers. The Treasury Department and the Board of General Appraisers have indorsed these measures.

To Amend the Act of 1890.

The bill providing for the amendment of the customs administrative act of 1890 has been drafted with a view to curing certain defects in the statute pointed out several years ago by the Treasury Department and the Board of General Appraisers. A measure embracing certain amendments passed the House in the last Congress but was ignored by the Senate Finance Committee, as it was then believed that a revision of the tariff would soon take place. The disposition to defer tariff legislation indefinitely now being manifested by the leaders of both houses will naturally strengthen the movement to reform the administrative laws.

The bill to be reported by the Ways and Means Committee first proposes to amend section 7 of the act of June 10, 1890, by providing that in the case of undervaluations additional duties may be assessed up to 100 per cent. of the appraised value of the merchandise in question, instead of 50 per cent., as in the present law. If the appraised value shall exceed the declared value by more than 100 per cent., except when arising from a manifest clerical error, the entry shall be held to be presumptively fraudulent and the collector of customs shall seize the merchandise and proceed as in case of forfeiture for violation of the customs laws. The necessity for this change has been made apparent by the experience under the present law. It has been found in many cases that, while it would be a comparatively easy matter to collect additional duties up to 100 per cent. of the value of the merchandise it is impossible to secure such evidence as would result in the forfeiture of the goods. As a result, it is believed that in thousands of cases where additional duties could have been assessed up to 80, 90 or even 100 per cent. of the appraised values, the appraising officers have assessed additional duties of not to exceed 45 to 48 per cent. in order to avoid the necessity of bringing forfeiture proceedings in which the government would probably be worsted. Should this feature of the bill be incorporated in the law it would result in the collection of a much larger amount in the form of additional duties, and at the same time would obviate a great deal of fruitless and costly litigation in the shape of forfeiture proceedings.

To Expedite Litigation.

It is also proposed to amend sections 14 and 15 of the administrative act of 1890 by providing that appeals be taken from the Board of General Appraisers directly to the United States Circuit Court of Appeals, ignoring the circuit court, provided that "the board of three general appraisers, or a majority of them, who decided the case, may, within 30 days from the date of the receipt of their decision by the collector, grant a rehearing of said case when, in their opinion, the ends of justice may require it; and said board shall have power to establish from time to time such reasonable rules of practice as may be deemed necessary for the conduct of their proceedings not inconsistent with law."

The object of this change is to expedite the adjudication of all customs appeals, and it is estimated that many months, if not an entire year, will be saved in the average case involving issues of importance. In the iron and steel trade, especially, the expediting of customs cases is of the utmost importance. It is the almost uniform practice of the Treasury Department to appeal from adverse decisions of the board based on the metal schedule, as the department, realizing the magnitude of the industry, assumes that each victory of the importers will be followed by a large influx of foreign material. It usually happens also that after all available evidence has been presented to the Board of General Appraisers an investigation by a special agent is ordered, with the result that new testimony is secured for presentation either to the circuit court or to the board in a new test case. The practice under the amended law would make it necessary for the Government to lay all its evidence before the board, and appeals to the United States Circuit Court of Appeals would involve the consideration of none but questions of law. The demands of justice are fully safeguarded by a proviso that if the Court of Appeals is in doubt as to any particular fact in the record it may order the Board of General Appraisers to take additional testimony on that issue.

In order that litigants who may now be in court shall be amply protected, the bill provides that nothing therein "shall be construed to repeal or modify the provisions of section 34 of the tariff act of July 24, 1897, as to rights accrued or suits or proceedings commenced and now pending in any of the circuit courts or other courts of the United States."

Reorganization of Customs Districts.

The bill relating to the consolidation and reorganization of customs collection districts contains a single comprehensive provision authorizing the President of the United States "to establish convenient districts for the collection of revenue from customs and for the interests of commerce and shipping, and for those purposes he may subdivide any State or Territory within or appurtenant to the United States or any part or parts thereof into one district, and may from time to time alter said districts: provided that there shall be no more than 120 collection districts."

No reform in the customs service is so urgent as that provided for in this bill. In his last annual report Secretary Shaw called attention to the waste of the revenues in the maintenance of large numbers of small ports at which the receipts are insignificant, but at which large quantities of merchandise are frequently imported and examined by officials having no technical knowledge of the goods in question; hence invoice valuations are accepted without question and the Government thus suffers a heavy loss in revenue.

The necessity for licensing customs brokers grows out of the desirability of extending to such attorneys all possible facilities, while at the same time bringing them within the general supervision of the Treasury Department. The new bill provides, however, that the act "shall not be so construed as to prohibit any importer from transacting business in person at a custom house pertaining to his own importations."

Drawback Law Amendments.

It is probable that when these measures are taken up in the House an attempt will be made to add thereto certain features of the pending bills providing for the amendment of the drawback law. Such amendments would undoubtedly be germane to the bill for the amendment of the customs administrative act above described, but the Ways and Means leaders will probably not be willing to accept such amendments unless in the meantime it is decided to investigate the question of the desirability of the proposed changes in the drawback law. W. L. C.

Michipicoten Range Statistics.—It has hitherto been impossible to get the precise figures of iron ore shipments from the Michipicoten range, Lake Superior. All statistical statements regarding the range have therefore been slightly inaccurate. But the necessary data have now been found and the accurate figures are given below for the first time of Helen mine shipments from the beginning, in gross tons:

1900	53,470	1903	203,413
1901	232,505	1904	118,355
1902	298,430	1905	169,527

This makes a total of 1,075,700 tons, which differs from the total of 1,007,000 tons given heretofore. Lake Erie receipts will be 1 per cent. less on account of the regular deduction for losses, plus a loss of 5000 tons in a wrecked ship.

Piping History Repeating Itself.

BY JAMES ACTON MILLER.*

It has been but a few years since the many forms of pipe fittings have been available, and the old-time piper can remember when all bends of every conceivable degree were made on the job. Of course the pipe then used was rarely larger than 2 inches and 1¼-inch was considered to constitute a big piping job. The ability of the piper of those days to put crooks and turns in a line of piping was wonderful, as he really had no appliances for doing such jobs except hands, feet and a knee frequently utilized as a former to bend the pipe around. In the last

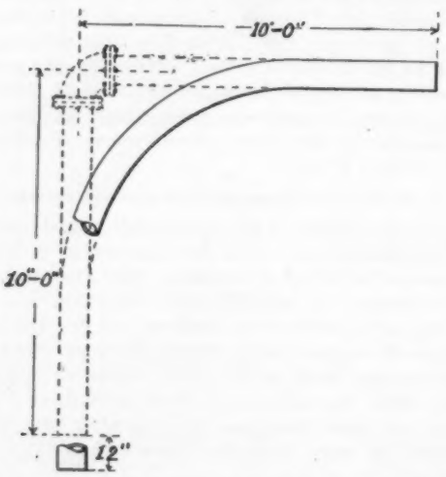

Fig. 1.—A Right Angle Turn Executed with a Bend and with Fittings.

few years wrought pipe bends have come into use again, largely from necessity, as before, though a necessity of a different kind—namely, the greater steam pressure now demanded in the effort to get more work out of the engine or pump, which makes it unsafe to use cast iron ells. Another advantage of wrought bends is a saving in expense, in erection. maintenance and operation.

As to the first cost, take for example a right angle turn in a line of 10-inch pipe. If fittings are used there will be needed a long sweep extra heavy cast iron ell, two extra heavy companion flanges, two corrugated copper gaskets, two sets of bolts and two threads on the pipe. Add to the cost of these the cost of making up and the expense will be close to $30. To carry the above sized line around a corner (see Fig. 1) it will take 18 feet of pipe to measure 10 feet each way in the run, allowing for the ell. The same length of pipe formed into a bend with the proper radius of about 8 diameters will reach 1 foot farther in the line than the same pipe with the ell, and the entire $30 will be saved, less the cost of bending the pipe, which ought not to be more than one-third or one-fourth the above amount. There is, moreover, a loss in the use of the pipe with the ell, due to friction, eddies and counter currents in the steam, condensation induced by such friction, &c., which is avoided with well made wrought pipe bends.

Besides the above a great saving is effected by bends in the cost of covering the piping and the risk of blow outs at both sides of the ell, or the rupture of the ell itself

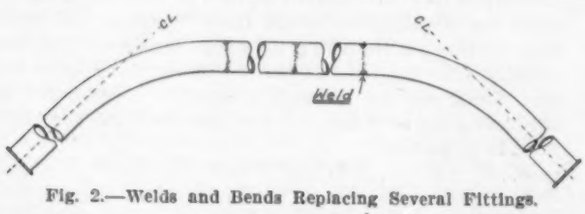

Fig. 2.—Welds and Bends Replacing Several Fittings.

is eliminated. It is now possible to have a number of pieces of piping of any size welded together, thus avoiding trouble with joints as well as the actual risk in their use, and also effecting a saving in first cost. Fig. 2 illustrates this new and certainly desirable feature in piping. Four random lengths of pipe are welded into one piece about 80 feet long and a 45-degree bend is made near each end. This will reach as far around a corner in a line of piping as five lengths of pipe with an ell at the angle. In fair sized lots it is feasible to ship such bends, as they measure less than 74 feet over all. Such bends may be made of two or three welded lengths of pipe and shipped easily in lots on open cars.

For pipe lines for hydraulic work in mines and for high head water power use there ought to be more wrought bends used than there are, both for results in use as well as savings to be effected in first installation. This is especially true for underground work, where the nearest way can be used frequently or a cut can be made across lots, with its attendant savings.

Another great saving or betterment in this class of engineering can properly be noted here, and that is making joints by flanging the end of the pipe out, bringing the two abutting ends of the pipe into direct contact,

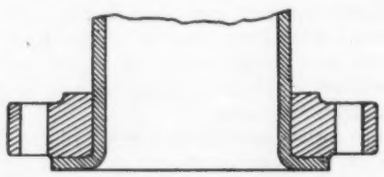

Fig. 3.—A Good Form for a Flanged Joint.

as shown in Fig. 3. Joints of this kind should be made leaving full thickness of the pipe in the flanged out portion, and they can be supplied at a trifle additional cost to that of the old style screwed flange, and are much better. The flanges swivel, and if properly made are stronger than the more costly welded flanges, as the latter are likely to cold short or deteriorate the pipe by too great a heat in welding. The welded flange will not swivel, and the gasket has only as much contact as it has if flanged out as above.

Probably the newest thing in piping is the divided flange, Fig. 4, to be used with flanged out ends, above described. It is just as strong as a solid flange and is very convenient to use in cramped quarters where piping is often placed or in passing through a wall to save cut-

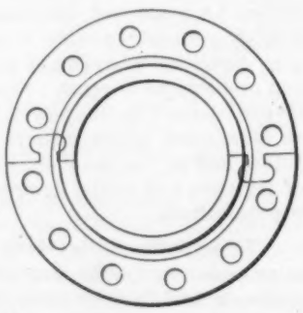

Fig. 4.—A Divided Flange That Does Not Have to Be Slipped Over the End.

ting a large hole or to save slipping the solid flange back ting a large hole or to save the slipping of the solid flange back and forth on the pipe while it is being handled, mashing fingers, and being in the way generally. The divided flange can be placed around the pipe at any time and made up the same as if solid.

One very important thing in all pipe bending work is to insist on using a large radius or the largest that can be put into the given position. In all cases the radius of the bend should be fully or nearly eight times the nominal diameter of the pipe, and in most cases even a large radius can be used or a long bend, like that shown in Fig. 2. In no case, if it can be avoided, should the pipe be cramped beyond what it ought to stand. It is an easy matter for the draftsman to lay out a bend to be used in a piece of pipe, but it may cause trouble and expense if he has not selected the easiest radius to bend pipe of various sizes. It is greatly to be desired

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that a standard be established in bends as well as fittings. Bends frequently and in fact nearly always can be made with random lengths from center of line run to one or both ends of the bend, as the straight section can be cut readily to fit, but to cut the ends off a piece of pipe and thread it after it is bent is not so easy.

It is a mistake to believe that a buckle on the inside of a pipe bend indicates a poor job, for it is better than stretching the pipe somewhere else and so reducing its strength. If the buckles are hammered out or down, the pipe is knocked out of round or reduced in size, and the metal is generally rendered unsafe. The pipe is stronger when allowed to buckle a trifle, and as it is covered, or should be, in use it can make no difference. The writer recently saw an attempt to make a 10-inch return bend on a 30-inch radius for an expansion loop, in accordance with the specifications of the engineering corps of a large company in this country. Its making was undertaken by a shop having a good equipment and good men. After breaking two or three pipes a bend was finally got down to a center radius of about 39 inches, but the bend was so oxidized that it was practically worthless for the purpose for which it was intended and it had no more elasticity than one made of cast iron, if as much. Ample room could have been provided for making an expansion loop by welding up pipe and bending it on a radius that would give it proper flexibility in its completed state.

This same job as finally executed is a good example for consideration in connection with the first part of this article, although it is not mentioned with any spirit of criticism, as the work was very well done. There were used three cast iron ells, with the joints and parts accompanying them, all within 40 feet of the line run, where a good bend made with two pieces of welded pipes would have saved about $75. The designer thought it would cost too much to get a bend made, and he did not figure the cost of the ells, &c. Pipe bends are seemingly used where nothing else would do, and standard fittings are frequently employed where bends would be better and would effect a large saving in first cost and use, as so clearly exemplified in the above noted instance.

Entertained by the Allis-Chalmers Company.—Prominent officials of the United States Steel Corporation and its subsidiary companies were guests of the Allis-Chalmers Company at Milwaukee last week. Inspection was made of the various departments of the latter company's works and of its new plant being erected at West Allis. Tuesday evening, on the invitation of W. S. Dolan of the Allis-Chalmers Company, the party was tendered a banquet at the Plankinton Hotel, and Wednesday evening a dinner was given at the Milwaukee Club. In the party were the following: John Reis, assistant to president of the United States Steel Corporation, New York; M. A. Neeland, assistant to Mr. Reis, New York; G. G. Thorp, vice-president Illinois Steel Company, Chicago. Of the Carnegie Steel Company: H. A. Fennerty, general purchasing agent; Edwin E. Slick, chief engineer; C. E. Dinkey, general superintendent; A. E. Macoun, superintendent of furnaces; S. Dillon, chief engineer; H. Benn, superintendent Bessemer department, and D. Miller, superintendent of rail mill, Edgar Thomson Works; Homer Williams, general superintendent Duquesne Steel Works; William Ahlen, chief engineer Duquesne Works; W. H. Lewis, general superintendent South Sharon Works. Of the American Steel & Wire Company: F. H. Daniels, chief engineer; H. Barrun, general superintendent Newburg Works. Of the National Tube Company: Taylor Alderdice, vice-president; C. G. Crawford, general manager; James Wilson, superintendent of furnaces. Of the Illinois Steel Company: William A. Field, general superintendent South Works; E. B. Clark, assistant superintendent.

A New Gasket.—For mechanical uses the ever increasing steam, water, air and gas pressures call for improvements in joint connections to withstand the highest service. Such joints must be absolutely air, water and gas tight under any pressure; must be easily and quickly made and taken apart; should be as thin as possible; should not leak when cold or hot or from unequal expansion, and, further, should not cause electrolysis; hence on iron pipes a gasket composed of iron should make the best joint. The attention of engineers is called to the Smooth-On corrugated iron gasket, coated thinly with a special iron cement that appears to fill these requirements and is claimed to make the thinnest and strongest gasket in use and the nearest to a ground joint. It is as durable as the pipes it connects, as well as one of the cheapest gaskets. The active principle of a slight expansion found in these gaskets when in place makes the connections tight and strong, which is not obtained in the inelastic material commonly used for such purposes. Joints made with the Smooth-On packing are ready for use as soon as completed, can be taken apart when necessary and the same gasket can be used again. These gaskets will keep indefinitely. They are manufactured by the Smooth-On Mfg. Company, Jersey City, N. J.

Uniform Price Lists.

The efforts of the Southern Supply and Machinery Dealers' Association to establish a standard size of catalogue sheets so that dealers can make up complete price books on all goods for the use of traveling and house salesmen has brought some results. It appears, however, that there is still imperfect understanding of the scheme and in some cases catalogue sheets have been sent out which are not suitable for addition to the general collection. With a view to assisting the movement, the St. Louis Machine Tool Company has sent out a circular letter to dealers in the trade asking for information as to how the catalogue sheet should be printed. The letter states that the company is heartily in sympathy with the project to establish a standard size, but is at a loss to know how the sheets should be compiled to be most useful and convenient; it is recognized that there should be a uniformity observed by manufacturers to get out the price list, which has not been the case, and the following questions are asked:

1. Do you prefer to have the manufacturers' literature contain list prices?
2. If your answer is in the affirmative, do you prefer to have a low list and small discount, or a high list and large discount?
3. Referring to price sheets for loose leaf price book, if your answer to the first question is in the affirmative, do you prefer to have the same list printed in the price sheets that is printed in the circular or catalogue?
4. Do you prefer to have the prices on price sheet net cost f.o.b. cars at point of manufacture?
5. Do you prefer to have the prices on the price sheet the regular selling price f.o.b. cars at point of manufacture?
6. If your answer to question No. 5 is in the affirmative, what per cent. above cost do you consider a fair selling price?
7. Please do not take freight into consideration in answering above questions, as it would be impossible to make a price-list covering freight, it being much higher to some points than to others.

These queries have been sent to all the machinery dealers and supply houses of which the company has knowledge, and the replies when received will be tabulated and the results will be given to those interested in having them. As is well understood by those interested in the movement, the standard size adopted by the dealers for sheets is 6 x 9 inches, but dealers have complained that manufacturers who have attempted to comply with their request have adopted no particular style of printing, and their methods of compiling their pages have by no means been uniform. The result of the St. Louis Machine Company's efforts will probably be that a general style of tabulating catalogue sheets will be adopted by all concerned.

The Youngstown Iron & Steel Roofing Company.—At a meeting of the directors of this company, held at Youngtown, Ohio, January 12, C. A. Cochran was elected a director to succeed G. M. McKelvey, deceased. John O. Pew was elected vice-president to succeed Mr. McKelvey and now fills the position of vice-president and general manager. The company manufactures all kinds of iron and steel roofing, black and galvanized iron and steel sheets, corrugated metal lath, sheet metal lath, trough bridge flooring fire proof flooring and the Union metal corner bead. It is operating its large plant to full capacity, having a great volume of business booked.

Permanent Molds and Carbon Cores.*

BY HENRY C. CALDWELL, BUFFALO; N. Y.

Obstacles Encountered in Making Permanent Molds.

The chill mold in which car wheels are cast is a success; that we concede, but inasmuch as it can be applied to no other work it is not very interesting to foundrymen in general. The reason metal molds have not been practical except for very low melting point metals is because unequal expansion rapidly destroys the mold if it is thick enough to prevent warping. The hot metal will expand the inner portion of the mold very much more than the radiating heat will expand the outer portion.

It has not been hard for experimenters to conclude that carbon was the logical thing from which permanent molds should be made. This was because they had better results than with any other substance. Several inventors were so successful in their experiments that they secured patents on certain molds, two of them so long ago that their patents have expired by time limit.

Experiments are apt to be made with lead or aluminum and so many duplicates are produced from one mold that the inventor concludes that he has solved the problem only to find that when he pours gray iron or brass his mold ignites or gradually disintegrates from expansion and contraction and that his only advantage over a metal mold is his low cost of production.

Carbon Molds Considered.

Like many others, the writer concluded, after carefully looking the ground over, that carbon was the only substance from which a permanent mold, in the sense we have in mind, would ever be made. He then began to study the problem and to repeat to himself the question, Why is it that theoretically we can make permanent molds out of carbon but practically we cannot?

Having long since become a convert to the theory that all elements have their ignition point and that the only difference between any two things is the difference in temperature at which they are created or the speed and direction in which they are going, I began to reason like this:

Carbon will ignite in contact with oxygen when the temperature arrives at the right point, and the right point varies according to the kind of carbon and the kinds of carbon vary according to the temperature at which they are produced.

For illustration, take ordinary bituminous coal, place it in a retort and submit it to a temperature of 212 degrees F. and you will drive off steam, but you will not affect the other constituent parts. Raise the temperature and drive off a certain amount of volatile matter or gas and you will have left a piece of ordinary coke. This piece of coke will ignite if it comes in contact with molten metal, providing the emelting point of the metal is higher than the highest temperature to which the coke was submitted. Suppose, however, you had continued to raise the temperature of your retort until you had carried it beyond the melting point of steel, for instance; then the point of ignition of the carbon would be above the temperature of molten metal, and, as a consequence, it would not ignite when the metal was poured against it.

Effect of Raising the Point of Ignition.

In order to test the theory, suppose you take a quantity of very fine, dry sawdust and apply a match to it. The result will be instantaneous ignition. Take the same quantity of the same kind of sawdust and subject it to a very high pressure, sufficient to reduce its bulk to one-tenth its original size, and see how much longer it will take you to ignite it. The pressure does the same thing in a modified way to the sawdust as the high temperature does to the coke, because temperature and pressure are really the same thing.

Theoretically then, the permanent mold problem was solved. All I had to do was to get some carbon (coke) produced at a higher temperature than the metal I intended to cast.

I secured a quantity of the hardest coke I could find and made some molds. I could pour aluminum castings indefinitely, but when I tried brass I soon destroyed the mold.

My next move was to subject the mold to a very high baking heat with a view to raising the ignition point. In this I was reasonably successful—that is to say, I raised the point of ignition high enough to permit brass castings to be made, but I had changed the shape of the mold, so that the castings were not like the pattern. This was due to two causes: First, the surfaces of the mold, both inside and out, were disturbed by the gas that this temperature, which was higher than that at which the coke was produced, drove off, and second, because in baking the mold the temperature of the oven was uneven, being hotter on the bottom than it was on the top, which resulted in the bottom expanding before the top and causing a number of small cracks, which so weakened the mold that it soon went to pieces.

By this time I came to the conclusion that the coke would have to be produced in the first place at a temperature high enough to drive out all of the volatile matter that would come out at, say, 4000 degrees F. Having been a student of temperature for many years and having, as I believe, succeeded in producing a fire many degrees hotter than is considered possible by many recognized authorities on chemical combustion, I began to look for a method of applying my knowledge to the manufacture of coke. This was not very difficult and in a short time I had what I was looking for and again proceeded to make molds.

I found even this did not overcome all my troubles. It was still necessary to bake the molds, and it had to be done at a temperature so far above the melting point of the metal that the limit of 4200 degrees F. claimed by most scientists as the hight of temperature possible by chemical combustion would have to be very much exceeded.

An Oven of Over 4000 Degrees Necessary.

I wanted an oven with a temperature absolutely uniform and even in every part—top, bottom, sides and center—and I wanted that temperature to be over 4000 degrees F. You can readily understand that if my oven was to attain this temperature throughout I would have a temperature far above this outside the oven. It took many weary days and nights to work this out. In fact it ran into months and finally into years, but I succeeded; otherwise I would not be here to-night.

Students and thinkers have latterly concluded that the only limit to temperature by chemical combustion is the means of controlling, or rather containing, it.

Molds baked in a 4000 degree oven will withstand any molten metal up to and including steel. They will not expand or contract and seem to get better and better the longer they are used. If any of my hearers are skeptical they may test me out, and to this end I will launch a challenge at the risk of being convicted on the charge of boasting. I defy any of you to bring me a refractory substance, such as carbon points for arc lights, carborundum from the electrical furnaces at Niagara or pieces of crucibles, that I cannot reduce in 15 minutes. I would like to be in a position to demonstrate this whole matter to you all, but we are not yet through with the Patent Office, and until we are self preservation demands that we do not reveal our system or the construction of our furnaces except to the persons interested as stockholders in our company.

How Shrinkage Is Provided For.

I think I hear some of you asking how I am going to take care of the shrinkage of the castings. It will surprise you to learn how many castings that at first seem incapable of being produced in permanent molds can be very readily handled.

Franklin L. Sheppard of Philadelphia will be the president of the company we are about to form. His business is manufacturing stoves, a field that on first thought one would think it very dangerous to enter. As a matter of fact, we have figured out how it will be possible to make almost every part either in a permanent mold or parts of permanent molds. The rings, for in-

* Read at the January meeting of the Philadelphia Foundrymen's Association.

stance, will be made in molds the outsides of which will be permanent and the centers of sand to take care of the contraction, which is all inward, and the molding machine will need a big handicap to beat us out.

The only question open is, How much carbon will be taken up by a steel casting?

My own opinion is that not enough will be taken up to change the analysis, for the reason that the mold will not give up anything if you keep below the temperature in which it was baked. A number of steel experts agree with me on this point and none dispute me. My experiments have been very limited with steel, because by the time I get up to and include gray iron I am in a field so wide that I do not expect to feel cramped.

A step in advance often makes it necessary, or at least advisable, to take another. It was only a short step, but nevertheless a very important one, from the carbon mold to the carbon core, and then another one to the carbon core box.

Carbon Core Boxes.

Core boxes are made exactly the same way and out of the same material that we make permanent molds. It is only necessary to have a core made in the usual way or a pattern such as you would have to make a casting, then make the box in sections, put the sections together, hold the box under a hopper containing an absolutely dry powder, fill the cavity, shake it down a little and place the whole thing in an oven with about a 1500 degree temperature and in from 5 to 30 minutes, depending on size, the core is ready to take out of the box and as soon as it cools enough to be handled it is ready for use. This will, as a matter of course, be much more valuable for intricate than plain work. By this system one is no more difficult than the other, but plain shapes are now made very cheaply by the old process. Another great advantage is that a boy or a girl strong enough to lift the box can make a core as good as the most skilful core maker. Venting is practically done away with, as the red heat to which the core is submitted drives out all the gas that was in the carbon and leaves the core so porous that it will easily take up all the gases that may be in the metal.

These cores may be kept indefinitely and when we are through with them we grind them up and use the powder over again, or put them in our fire, where they are worth almost as much for fuel as they cost to make originally. This material is much cheaper than any core compound I know of.

We have just completed the organization of a company that will be known as the Caldwell Process Foundry Company, and we expect to be doing business at the corner of Montgomery avenue and Fourth street, Philadelphia, before the end of this month.

Electric Furnace Processes.

Under the heading "Recent Electrochemical Development" the following interesting account of the latest experiments with electric furnaces appeared in the *Electrical World and Engineer*, December 16, 1905:

The revolution in workshop practice, brought about by the arrival of high speed tool steels, has been intimately connected with the revolution in the ferroalloy industry, due to the introduction of the electric furnace. It is only in the electric furnace that most high percentage ferroalloys, low in carbon, can be made. The only process which the electric furnace industry has to compete with is the aluminothermic method, using aluminum as the reducing agent (instead of carbon in ordinary electric furnace practice). By the aluminothermic method several carbon free metals, like chromium, &c., are produced. The feature which distinguishes both the electric furnace and the aluminothermic methods from the blast furnace process is that very high temperatures may be easily obtained in the former two methods. Nevertheless, it appears that so far it has been impossible to reduce some extremely refractory oxides, like that of titanium, to the metallic state by either of the two methods. It is not strange that to reach this goal a combination of both methods is now being tried. The recent American Electrochemical Society paper of O. P. Watts described experiments made in this direction by adding the heat of the electric arc to that of the aluminothermic reaction.

A. J. Rossi, the pioneer of ferrotitanium, is also working in a similar direction, as shown by a patent recently granted to him. The feature which distinguishes his method from the aluminothermic process is that he does not use finely powdered aluminum, but scrap or pieces of aluminum in any form, which he introduces first into the electric furnace. When the current is turned on the aluminum is fused. The refractory oxide to be reduced is then introduced into the fused bath of aluminum. Thus not only the electrically generated heat is utilized, but also the oxidation heat of the aluminum (of course minus the reduction heat of the oxide).

A new form of electric furnace for the production of calcium carbide has recently been patented by Appleby. It is chiefly characterized by a movable bottom, so that constantly fresh portions of the charge are introduced into the zone of the stationary electrodes.

Talbot Process Installations.

Mention was made recently in these columns of the action taken by the three companies in the Cleveland district, England, commonly known as the Furness companies—the Weardale, Cargo Fleet and South Durham companies—in acquiring a controlling interest in the Talbot Process Company of Great Britain. It is now estimated that the steel producing capacity employing the Talbot process amounts to nearly 1,000,000 tons a year in the United States and Great Britain. The installations now in operation or under construction are the following:

One 75-ton furnace, built in 1899 by the Pencoyd Iron Company, Pencoyd, Pa. Now in operation.

One 200-ton furnace, built in 1902 by Jones & Laughlin Steel Company, Pittsburgh, Pa. Now in operation.

One 200-ton furnace, built in 1904 by Jones & Laughlin Steel Company, Pittsburgh, Pa. Now in operation.

Three 200-ton furnaces, built in 1905 by Jones & Laughlin Steel Company, Pittsburgh, Pa. Now in operation.

One 100-ton furnace, built in 1902 by Frodingham Iron Company, Frodingham, England. Now in operation.

One 130-ton furnace, built in 1905 by Frodingham Iron Company, Frodingham, England. Now in operation.

One 175-ton furnace, built in 1903 by Guest, Keen & Co., Cardiff, South Wales. Now in operation.

Two 175-ton furnaces, built in 1905 by the Cargo Fleet Iron Company, Limited, Middlesboro, England. Now in operation.

One 75-ton furnace under construction by the Cargo Fleet Iron Company, Limited, Middlesboro, England.

Two 175-ton furnaces under construction by the South Durham Steel & Iron Company, Limited, Middlesboro, England.

Two 175-ton furnaces under construction at the Malleable Works, Stockton-on-Tees, England.

Two 175-ton furnaces under construction by the Palmer Shipbuilding Company, Jarrow-on-Tyne, England.

Two 175-ton furnaces under construction at Longwy, France.

It is expected that the producing capacity under the Talbot process will be increased materially in 1906. In the United States the process is controlled by the Continuous Steel Process Company, represented by H. W. Lash of the Garrett-Cromwell Engineering Company, Cleveland.

Last year 33 steel steamers were launched at the various shipbuilding plants along the Great Lakes. Ten of these were from the yards of the Great Lakes Engineering Works of Detroit, 22 from the yards of the American Shipbuilding Company, and one from the yard of the Toledo Shipbuilding Company, Toledo, Ohio. Detroit had the greatest number of launchings, eight from the Ecorse yards of the Great Lakes Engineering Works and four from the Wyandotte plant of the American Shipbuilding Company.

Canada's Steel Industry Inadequate.

TORONTO, January 13, 1906.—In a former letter reference was made to the indications of increasing disparity between the demands of Canadian railroad builders and the supply of Canadian rails. The 20,000 miles of existing lines never had such a strain of traffic as that since October 1. Yet the total freight tonnage carried has been rising steadily for years. It has long been an almost unbroken rule for annual statements to surpass the immediately preceding annual statement; for the returns for any given month to exceed the returns of the corresponding month of the year before. Both the Canadian Pacific and the Grand Trunk are constantly adding to their hauling power, and piling up greater earnings. This means a more rapid wear and tear of trackage, a shorter life for rails, and unceasing outlay for them. The yearly expenditure on rail renewal account for 20,000 miles of hard-worked lines is no inconsiderable part of the total outlay on roadway.

In the existing mileage an addition of at least 25 per cent. will be made in the next three years. Of this 5000 miles, perhaps quite 4000 will be in the National Transcontinental system. The agreement between the Canadian Government and the Grand Trunk Pacific Railway Company requires the Western Division of the National Transcontinental to be finished by December 1, 1908, almost exactly three years hence. The Government is expected to have the Eastern Division completed at the same time. The two divisions will make a continuous main line of about 3500 miles. To this are to be added branches. That from Lake Superior alone, which is now being constructed, is to be upward of 200 miles long. Four thousand miles seems a conservative estimate of the total heavy traffic lines on the National Transcontinental system by the end of 1908. This makes no account of the light electric lines that are almost sure to be a considerable tributary mileage to the system.

Another effect of the National Transcontinental's construction to be taken into consideration is its impulse to building of new mileage by rival lines. As soon as the location of that section of the new transcontinental which runs from Portage la Prairie and Touchwood Hills was decided upon, it was seen that the Grand Trunk Pacific was to be a competitor of the Canadian Pacific and of the Canadian Northern, and not, as was supposed, the mere opener of a new zone of settlement and production. The Railway Commission allowed it to come to close quarters with the established lines and to tap the territory they had developed. This meant something like traffic war, and both the older lines at once began throwing out branches to rake the territory the newcomer hoped to have to itself on the north. That is to say, the new Transcontinental will not only add 4000 miles to the trackage of the country but will force the hands of its rivals in the matter of making additions to their systems. Both have announced large plans of extension.

Due attention has not been paid to another factor that has come into the situation; that is, the autonomy of the West. Saskatchewan and Alberta are now full-fledged Provinces, possessing among other powers of self-government that of constructing the purely internal railroads that they may require. One of the strongest arguments pressed upon the Dominion Government for the conceding of autonomy to the two western communities was the need of more local railroads, a need which the Dominion Government was said to disregard, and which as Territories Saskatchewan and Alberta were themselves unable to provide for. Now they have the power to build lines and to give to private corporations charters to build lines, and already applications are being made for such charters. The most important of these application is to the Saskatchewan Legislature in behalf of the Central Railway Company of Canada. It is suspected to be a Hill enterprise, as are the lines springing from the Great Northern of the United States and running into British Columbia. At all events, there will be building in the West under the auspices of the two new Provinces, as there is to be continued building under the auspices of the old one, Manitoba.

New Rail Mills.

To keep pace with this demand the rail manufacturing capacity of the country must be greatly increased or the home output must be largely supplemented by importation. The country has only two rail mills and their capacity seems to be kept busy on orders of existing roads. In the fiscal year ending with last June there were entered for home consumption foreign made heavy rails of the value of $5,051,762 and light rails of the value of $2,149,859. The former were brought in before the duty was applied; the latter were taxed 30 per cent. ad valorem, a duty which has been replaced by the $7 per ton specific rate, levied on rails of all weights. In the three months ending with September of the current fiscal year the value of rails imported was $390,063, most of them coming under the preferential tariff and therefore being of British make. Rails shipped on former orders have been received since the period covered by these returns.

If the protective duties and bounties by which the production of home rails is now encouraged be continued there is bound to be a material increase in the country's rail making capacity. The present Government shows no disposition to expose the rail manufacturers to onerous competition, but also it shows itself favorably minded toward the railroad companies. The renewal of the fostering policy that has been pursued toward the steel industry will make it practically obligatory on home manufacturers to produce an adequate output. Existing companies may double their plants or new companies may establish new plants, or both things may happen. The financial trials through which both the Sydney and the Sault Ste. Marie companies passed not more than two years ago are still fresh in the minds of investors, so fresh as probably to disincline them to further commitments in steel enterprises for the present. It would not be surprising, however, if an offshoot of the American rail industry were to be established on this side of the border, as so many branch plants of American manufacturing concerns have been. Revived rumors of such action on the part of the United States Steel Corporation or one of its constituent companies have been receiving some attention of late.

A Scarcity of Billets.

So great is the demand for rails that the two large companies producing them have practically nothing except finished products to spare for the market. Their pig iron goes into billets and their billets go into rails and rods. This leaves other consumers of these intermediate products dependent on outside sources of supply. At all events, such is the contention of some of the rolling mill interests who have to buy their billets. As representing those interests, William Bruckhof appeared before the Tariff Commission in St. John, N. B., on the 8th inst. Mr. Bruckhof is one of the officials of the Portland Rolling Mills. He presented a statement signed by a number of rolling mill managers, asking, first, that the duty on billets be not increased and, second, that the antidumping duty on them be suspended. He declared that not a single Canadian made billet was sold here in 1905, the total output at Sydney and Sault Ste. Marie being required for their own rolling mills. Not only have outside sources to be resorted to and a duty paid by the detached rolling mills of Canada, but also billets are hard to get outside. In an interview after the tariff hearing Mr. Bruckhof said that the first shipment of billets on an order which the Portland Rolling Mills sent to the United States last May reached St. John only six weeks ago, and that it will be some time before the remainder of the shipment arrives. In the same month an order was sent to England and the reply was that the English company could ship no billets to Canada until June next, 13 months from the time of ordering. Mr. Bruckhof's desire is to establish a billet plant in connection with the works of the Portland Rolling Mills. In the last fiscal year billets were imported to the value of $319,665. In the first three months of the current fiscal year the value of the billets imported was $36,000. As to Mr. Bruckhof's petition for the removal of the antidumping duty on billets, the Finance Minister reminded him that

no kind of article of which there is an inadequate supply made in Canada is subject to the antidumping duty.

Nails, Spikes and Wire.

Mr. Bruckhof states that American nails and spikes are being sold in Canada at prices below those maintained in the United States. Hon. Mr. Emmerson, Minister of Railways and Canals, said he knew that Pittsburgh people are offering railroad spikes in Canada at less than $2.10 per 100 pounds. Mr. Bruckhof said the ruling price in Pittsburgh is from $2.50 to $2.65. The Minister of Finance promised to look into this.

James Pender, of the Pender Nail Works, St. John, also said that nails which ought to bear the anti-dumping duty were escaping it. Certain lines of barb wire should, he said, be made dutiable at 20 per cent., but advised that some months' notice be given before enforcing it. That would enable the Americans to fill the market for possibly a year and would thus operate to prevent a sharp advance consequent on the duty. No sane man, he said, would now undertake to make galvanized wire in Canada. The United States manufacturers would swamp him.

At New Glasgow and Sydney, the two Nova Scotia centres of the iron and steel industry, petitions were presented to the Tariff Commission for a continuance of the bounties.

Tin Plate.

Hardware representatives of the Importers' Association met the Tariff Commission at St. John and asked, among other things, that no duty be placed on tin plate. There is a very strong agitation being conducted to influence the Government against a tin plate duty. A pamphlet on the subject has been prepared and distributed. In Morrisburg, where a tin plate plant is under construction, a certain section of the town has endeavored to prevent the agreement between the municipality and the company going into effect. The section in question sent a deputation to Ottawa a short time ago to persuade the Government not to grant the power rights required on the canal. Another deputation, representing a larger body of the property owners of Morrisburg, waited on the ministers with a request that the lease of the power right be issued. This deputation received assurance that the power privilege would be placed at the town's disposal without delay. C. A. C. J.

The Montreal Rolling Mills, Montreal, Canada, is arranging for the erection of a butt-weld pipe mill. This mill will be located on the property acquired some years ago with the Hodgson Iron & Tube Company, when this company was absorbed by the Montreal Rolling Mills Company. The equipment of the pipe mill will be up to date in every respect and in point of efficiency every care will be taken to make it equal to the best of American mills.

The Baird Tumbling Barrel.

The Baird Machine Company, Oakville, Conn., is putting on the market an improved tumbling barrel of oblique tilting type, which is shown in the illustrations. As will be noted the barrel may be elevated to the position shown in Fig. 1, which it occupies while in operation, or lowered to a position below the horizontal for dumping the contents after the tumbling has been completed. As the barrel is open at its outer end the work is always in view, so that its progress may be noted, and this feature also makes possible wet tumbling, water being admitted during the operation from a pipe above the barrel opening. The barrel shaft revolves in a tilting column, power being transmitted from a small bevel gear on the pulley shaft through the large bevel gear fastended to the fixture to which is attached the barrel. The column is pivoted so that it will swing in a vertical plane. A curved rack is fixed at one end to the column and serves as the medium for raising and lowering the barrel, which is accomplished by means of the ratchet handle. This crank shaft is back geared two to one to assist in handling the weight of the barrel filled with work. A pawl holds the barrel in the desired position. The machine will take barrels of wood, cast iron, steel, wrought brass and cast brass from 22 to 36 inches in diameter.

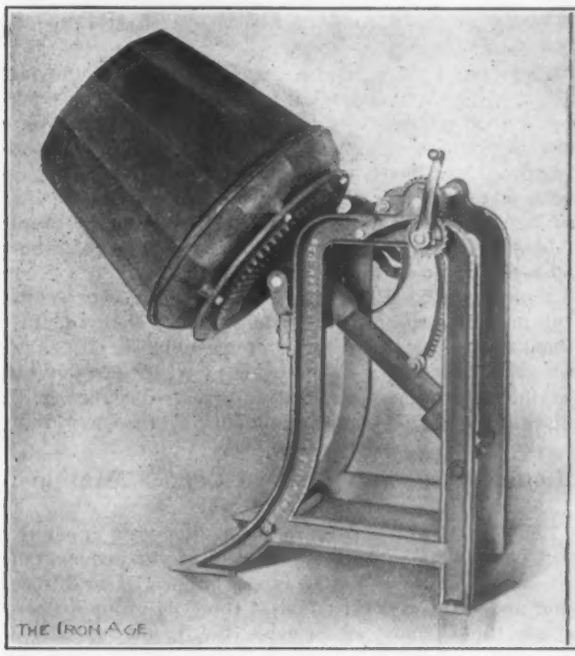

Fig. 1.—The Baird Tilting Tumbling Barrel in Operating Position.

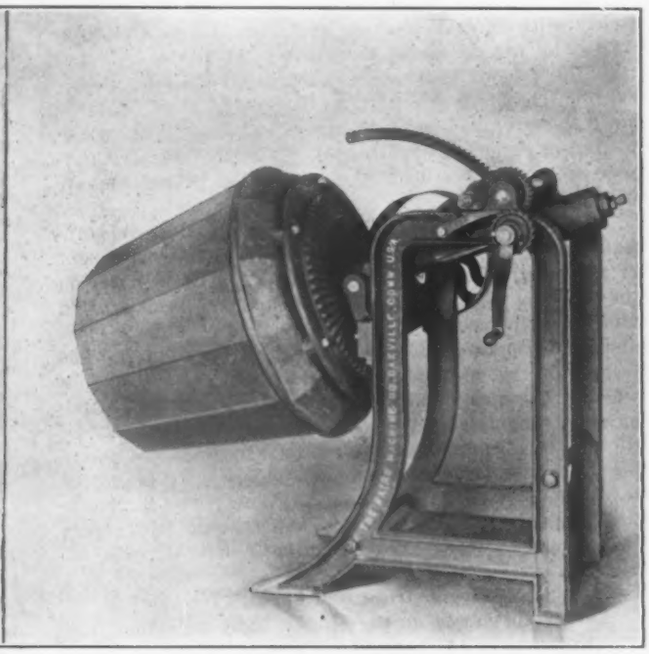

Fig. 2.—Position Occupied When Dumping the Contents After Tumbling.

The preliminary estimate of the Director of the Mint on the production of gold and silver in the United States in the calendar year 1905 gives a total of 4,178,592 fine ounces of gold, valued at $86,337,700. Of silver the estimated output was 58,938,355 fine ounces, of a commercial value of $35,952,397, on the basis of 61 cents per ounce. The gain in gold is approximately $6,000,000 over 1904, this being almost entirely represented by the increased output of Alaska, the product of which is put at $14,650,100, against $9,160,500 in 1904. California shows a loss of about $1,500,000, due to severe drought, its total for 1905 being $17,502,600. For Colorado the total was $25,333,300.

Movement to Repeal Federal Bankruptcy Law.

WASHINGTON, D. C., January 16, 1906.—A strong effort to repeal the Federal Bankruptcy Law is being made by Representatives in Congress from certain Southern and Western States. During the first five weeks of the current session of Congress no less than eight bills have been introduced to wipe the law from the statute books. Half as many measures having the same object are pending in the Senate. Further, four additional bills have been presented in the House incorporating important amendments in the existing law. All these measures are before the judiciary committees of the two houses, where they will probably be taken up at an early date. The leading credit men's associations and many other business organizations will demand hearings and it is hoped that the opposition to repeal will be so strong as to convince the committees that the statute should not be abolished or materially modified.

The principal argument in favor of repeal presented by the authors of the pending bills is that it has never been the policy of the United States to have a permanent bankruptcy law and that the present statute has served its purpose. It is claimed that there is no necessity nor any general public demand for the longer retention of the law and that it has tended to burden the Federal courts with litigation which could be just as well conducted by the courts of the States. It is also asserted that the friends of the present law who belong to the creditor class are constantly endeavoring to perfect the act into mere machinery for the collection of debts, minimizing or ignoring as far as possible the primary purpose of bankruptcy legislation—the relief of unfortunate debtors.

These arguments, it will be noted, constitute substantially the same plea that was made against the enactment of the existing law, special emphasis then being put on the assertion that the proposed statute had been drafted almost exclusively in the interest of the creditor class and would operate with harshness upon the debtors. The fallacy of this argument then and now appears at once when it is remembered that up to the time of its amendment by the passage of the Ray bill the chief criticism of the law by those most familiar with its practical operation was that a large number of debtors were permitted to rid themselves of their financial obligations to the injury of their creditors. It is obvious that the bankruptcy statute cannot work hardship in both these opposite directions.

Opposition to Repeal.

Several members of the House Judiciary Committee who are anxious to retain the present law on the statute books are preparing for an active campaign. They deny that the country is now in such condition that it can without injury to its great business interests dispense with the bankruptcy law. Our great prosperity since 1898, it is declared, has been more or less dependent upon our uniform system of bankruptcy legislation, which has greatly increased confidence in the credit system and has made it possible for every creditor to be treated with justice and fairness. If the bankruptcy law is repealed and the State insolvency laws are substituted, providing for preference to local creditors, credit will thereby become contracted, the confidence of the creditor class will be lessened and business will be seriously interfered with. Instead of having one national system for the administration and distribution of bankruptcy assets we will have 45 systems differing in details and with various preferences for resident creditors to the injury of nonresident creditors. The present bankruptcy law, it is asserted, is economical, prompt and efficient, and has been exceedingly well administered. If there were any strong demand for repeal it would be reflected in the reports of the Attorney-General, all of which have been uniformly commendatory of the law. The great argument in favor of the present law is that it is uniform in its operation, that it brings each creditor and each debtor in the country under its administration, that it treats all creditors alike, not only in giving to them equal share in the distribution of assets, but also in the selection of administering officers. The present law has been of great service to the country in prosperity, and it is predicted that it will be of even greater service in times of adversity and business depression.

Proposed Amendments.

It is not denied that there are minor defects in the present law, but there are bills pending designed to remedy them, and the House committee stands ready to consider them at an early date. Representative Bartlett of Georgia has introduced a bill which has attracted considerable attention and some favorable comment. Its most important provision is a modification of that feature of the law under which payments made on account in the ordinary course of business within four months of the filing of a petition in bankruptcy have been held by the courts to constitute improper preferences.

Referring to this proposed amendment, Mr. Bartlett cites the well-known Supreme Court case of Carson, Pirie, Scott & Co. vs. the Chicago Title Company, in which it was held that "where a creditor, bona fide and without notice of the insolvency of his debtor, receives part payment of an existing bona fide debt and bankruptcy proceedings are instituted within four months from the date of such payment, the bankrupt being insolvent at the time of the payment, the creditor so receiving such payment cannot participate in the distribution of the bankrupt's estate as to the balance of his debt without returning such part payment."

When the Federal statute was amended in the last Congress the amendatory bill as it passed the House permitted such payments to be retained, but in the Senate this feature was stricken out, presumably through inadvertence. Mr. Bartlett's bill provides that if such payments are received without knowledge at the time of the insolvency of the debtor and in the ordinary course of business they shall not be deemed to be preferences and need not be surrendered.

Representative Esch of Wisconsin has also presented a bill providing that in the consideration of claims against a bankrupt estate the salaries of traveling or city salesmen shall be included in the category with wages due to workmen, clerks and servants as preferred claims, with a limitation of $300 to each claimant. W. L. C.

Louis W. Powell Goes to Copper Mining.

Louis W. Powell of Duluth, Minn., has been appointed third vice-president, with full powers of the president in Arizona, of all the affiliated copper properties at Bisbee, going under the general name of the Cole group. These include the Calumet & Arizona, the Lake Superior & Pittsburgh and the Pittsburgh & Duluth, all of which are now producing mines, and the Calumet & Pittsburgh and the Junction, both of which are still in the development stage. President Briggs lives at Calumet, Mich., and is not actively engaged in the management of these companies. It was deemed necessary that there should be some one with full authority to act on the ground, a man who should be more than a mine manager and intimately associated with the directorate, as Mr. Powell is. Hence this appointment, which is one of the most important steps taken by this growing copper group for some time.

At the time of Mr. Powell's appointment as vice-president he had already been raised from assistant general manager to general manager of the greatest mining company in the world, the Oliver Iron Mining Company of Duluth, and was to have stepped into that position soon after January 1. It is no light matter to relinquish such a position. But the companies at Bisbee with which he associates himself are themselves not small affairs, for the group consists of 1500 acres of copper bearing ground and now has six deep vertical shafts and some 12 miles of underground workings, all of them the development of the past few years, while its smelter plant is capable of treating 1200 tons of rock daily and its copper production for 1906 should be in the neighborhood of 25,000 tons. None of the mines is out of the initial stages of development. Mr. Powell has been for six years associated in the management of the Oliver Iron Mining Company with T. F. Cole and W. J. Olcott, and has had much other experience in difficult mines.

A New Flue Cleaning Machine.

The cleaning of locomotive and other boiler tubes when they are removed from the boiler is ordinarily accomplished in a drum rattler, but the latter is limited in capacity, is noisy and is not always thoroughly effective. The machine illustrated is manufactured for and is sold exclusively by Joseph T. Ryerson & Son, Chicago, Ill., and is claimed to effect a considerable saving in the time and labor required in cleaning flues. These machines are already in use in some of the largest railroad shops in the country, among them the Montreal and Tacoma shops of the Northern Pacific Railroad and the Topeka shops of the Santa Fé Railroad.

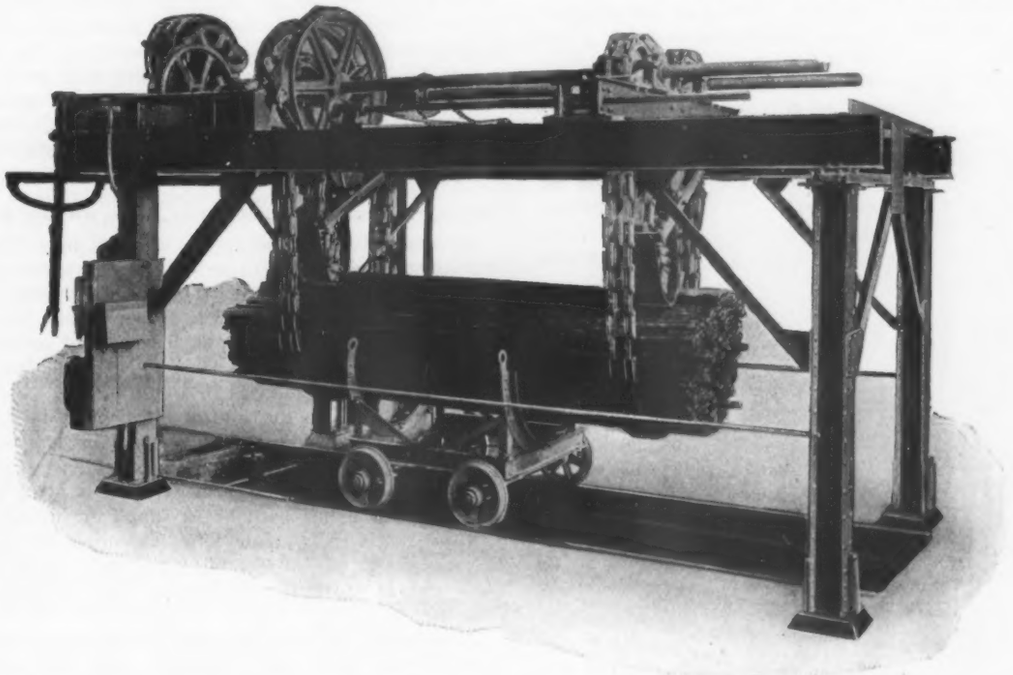

Fig. 1.—A Machine for Cleaning Locomotive and Boiler Tubes, Sold by Jos. T. Ryerson & Son, Chicago.

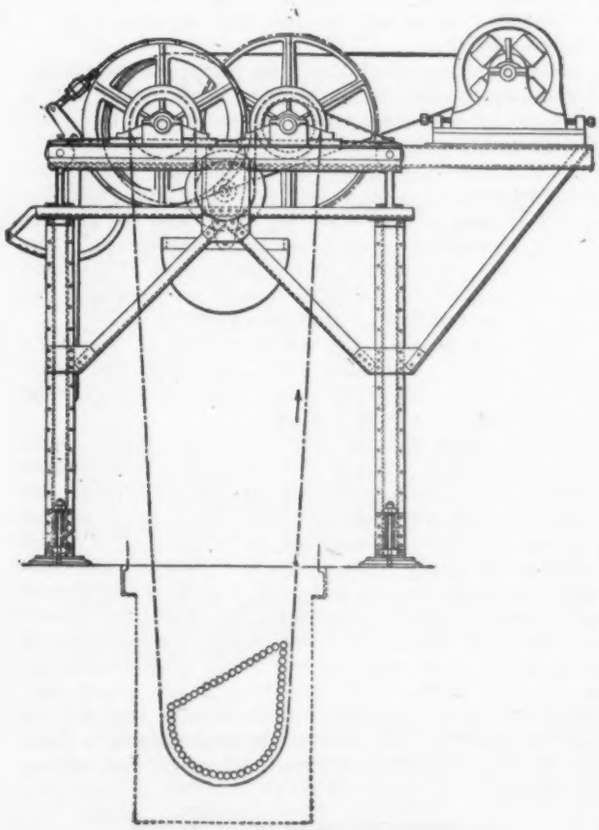

Fig. 2.—End Elevation and Cross Section of the Flue Cleaning Machine.

The machine comprises an overhead steel frame work erected over a concrete pit sunk in the floor of the shop, which is kept partly filled with water. The flues while being cleaned are suspended in the water by two wide-faced, case hardened, wrought iron chains, forming continuous loops in which the flues roll over and over upon themselves as the chains are driven. All gearing is overhead and driven by a direct connected motor. To keep the flues in position fenders are provided in the pit which are adjustable to flues from 8 to 20 feet long. The rear chain is supported by a traverse carriage which is moved toward or away from the front chain by screws driven by the main driving motor, thus adjusting the chains to the length of flues handled. The flues may be raised or lowered by means of an idler over which the driving chains pass and which by alternate raising and lowering correspondingly lengthens or shortens the suspending chains. By this arrangement the flues are raised by the machine itself without the assistance of a crane or hoist. On rails laid on either side of the pit a small push car is run and the flues to be cleaned are brought over the pit on the car, as shown in Fig. 1. They are then lifted from the car by the chains, the car is removed, the flues lowered into the pit and the machine started. Fig. 2, an end elevation and section of the machine, shows the manner in which the raising and lowering is accomplished and shows the tubes in the position occupied while the cleaning process is going on. To place the tubes in position to lower takes about four minutes and the only labor required is that of pushing the car into position. The actual time of rattling is about the same with this machine as with the barrel form of rattler, but five or six times as many flues may be handled at a time, so that the cost is reduced to less than four cents per hundred flues.

Another advantage claimed for this machine is the entire absence of noise, inasmuch as the rattling takes place under water. Furthermore the water washes out the soot and dirt from the inside of the tubes at the same time that the scale and other material is being scraped from the outside. The propelling chain moves at the rate of about 130 feet per minute. A 20 horse-power direct connected motor is used to drive the machine.

Geo. G. Blackwell, Sons & Co., Limited, Liverpool, England, have sent to their trade leather bound vest pocket memorandum books for 1906, with fillers, each covering two months and giving a page a day for memoranda. The company is a large miner of fluorspar and makes a specialty of ferro alloys.

Pickands, Mather & Co.'s Mines.

DULUTH, MINN., January 15, 1906.—Great activity prevails among the independent shippers of iron ore from Lake Superior—that is, those that are outside of the United States Steel Corporation. Among these the most decided pressure of business is shown by Pickands, Mather & Co., Cleveland, whose range interests are directed from Duluth by C. H. Munger as general manager. This firm mines not alone as a sales agency, though its business in that way is very large, but is associated with consumers in a number of its mines. The stocks of its Crete, Verona, Hobart and Scranton mining companies, for example, are owned in part by several important steel producers of the Middle West, the largest being the Lackawanna Steel Company, which is associated in two of these companies. But the management of all these mines is the same. Pickands, Mather & Co. made a production for 1905 of 2,020,672 gross tons, as follows:

Mine.	Tons. 1905.	Tons. 1904.	Mine.	Tons. 1905.	Tons. 1904.
Elba	125,744	123,425	Brotherton	136,023	84,870
Minorca	117,653	121,729	Sunday Lake	79,208	50,625
Malta	140,851	66,641	Mikado	140,740	25,611
Sparta	27,777	59,692	Baltic	133,245	151,114
Troy	87,584	12.759	Caspian	10,247	4,242
Albany	241,184	153,433	Vivian	90,423	81,354
Utica	185,942	120,697	Hemlock	124,450	126,232
Cyprus	235,351	244,343			
Odanah	144,101	30,420	Totals	2,020,672	1,457,197

In 1904 neither Brotherton nor Sunday Lake was a shipper for this firm.

Will Operate 19 Mines.

For the coming season Pickands, Mather & Co. will operate 19 mines on the Mesaba, Menominee and Gogebic ranges, and will carry out a number of explorations, five of which are now under way.

A number of their mines are difficult of operation, especially on account of water, which has been excessive, and others are sinking shafts through ground as unfavorable as has ever been touched in the Lake Superior region, and that is saying a good deal. The gross annual production of many of these properties cannot be large by reason of physical difficulties, but it is proposed to mine as heavily as possible this year, and the total shipments of the group will be a very important item in the total from Lake Superior.

Beginning at the easterly end of the Mesaba range their activities are as follows:

Mohawk Mine.

Mohawk mine is located in section 4-58-15, south of the Stephens and 3 miles east of Biwabik. Here a shaft has been sunk to the ore during the past few months and the mine is now beginning to produce. It will stock pile all winter and is expected to ship about 100,000 tons during the coming season. The shaft is in rock and is well equipped, the mine is quite dry and the ore is easily handled. It ships over the Duluth & Iron Range Railroad to Two Harbors.

Syracuse Mine.

Syracuse mine is now under development. It lies in the east half of the new quarter of section 6, same township, and is directly on the shores of Embarras Lake, in what seems to have been an ancient watercourse. The ore is covered in many places with bowlders mixed with wet sand, and it has been impossible to sink shafts into it anywhere near the lake. But the working force has now gone some distance back of the lake shore and is sinking a shaft by means of interlocking steel piling. So far the work has progressed satisfactorily, and it is expected that this mine will make a small shipment of ore the coming season, though its tonnage cannot be large. This experiment with steel piling is a new one for Lake Superior and will be watched with interest by all who have the same problem. In carrying out this operation the site of the shaft was first drilled quite thoroughly to ledge, some 65 feet down, to determine the nature of the ground, and when it was discovered that there were few if any bowlders in the way a timber crib shaft of ordinary style was put down to water level. This shaft was double, with outer and inner skins, there being space between them sufficient for placing the steel channels. Beams were then placed between the two sections of the shaft and automatically locked by means of their special form, after which they were driven 2 feet at a time, one beam after the next, for the circumference of the shaft. This work has proceeded some 20 feet and has yet 25 feet to go to reach ledge. When rock is struck the material within will be excavated and the inside timbering, which is the size of the permanent shaft, will be carried down to ledge and on as far as necessary. The channel beams are peculiar only in the fact that every other beam is plain, while those intervening are fitted with zee bars riveted on either flange. This makes the lock. The system is that of the Friestedt Interlocking Channel Company and as said above is new to the lake region.

Other Pickands, Mather & Co. Mines on the Mesaba.

Bangor mine, another new one, will have the same problem of sinking to ore as met the Syracuse, and the experiment with channel beams will be worked out at the one before any attempt is made to sink the other. Bangor is located on adjoining portions of section 6-58-15 and 1-58-16. It is not a large deposit and lies on the shore of Embarras Lake.

Corsica mine, in the southwestern quarter of section 18-58-16, has been idle for two years and has been full of water. It made a small shipment in 1903 from stock pile, but has done nothing else. Now it is being pumped out and in a month will be in shape for mining. The 1906 product will be about what the mine has produced in past years, say 40,000 to 50,000 tons. The mine is quite wet at the best and production is attended with difficulty.

Elba mine, adjoining Corsica on the west, in section 13-58-17, has sunk a new shaft in rock and will mine from it exclusively this year. The old shaft was in ore, the stock pile was on ore and the rail tracks covered a large amount of ore, so that a change was imperatively demanded. The mine's product will be somewhat increased over 1905.

Minorca mine, which like Elba belongs to the Hobart Iron Company, has also sunk a new shaft in rock and is prepared for a product somewhat better than last year. The property is in section 5-58-17.

Malta and Sparta are nearly through, the former being worked out. But a new shaft has been sunk this winter to take care of what ore is left and the product will be reasonable. Sparta has been abandoned and the lease is now surrendered to the fee owners. This mine has produced nearly 1,300,000 tons of good ore and has been active since 1897. It has been a surface mine.

Troy mine, which is the heel of the Fayal deposit, in section 7-57-17, will ship more ore than last year, probably better than 100,000 tons. There is little change in mine conditions from last year.

Between Troy and the Hibbing district the company is not interested. Its Albany mine is a considerable property and is being worked by the milling system. Its output for 1905 was considerably cut down by the serious and long continued wet weather, as its ore is quite sticky when wet and held in the chutes and pockets. The company has opened a new level and is prepared to exceed last year's business materially if conditions favor. Southwest of Albany is Utica, where the company is carrying out some stripping over a thin seam of lean ore on its west 40 and is mining from a new shaft also. These are all the properties on the Mesaba that will be operated this year, for the Crete Mining Company's large ore body in Scranton mine will not be touched during the season.

The Firm's Mines on Other Ranges.

On the Gogebic range this firm controls, among others, the Odanah Iron Mining Company of Hurley, operating the Cary and Windsor mines. Cary is sinking another lift, but Windsor has nothing different from last year. The tonnage of the year will not be materially changed.

Mikado, belonging to the Verona Mining Company, is sinking a new lift, but otherwise is in the usual condition. A remarkable growth has been made at this mine during the year. Adjoining Mikado on the south and east is

Pilgrim, which is now under exploration, but can produce no ore this year, whatever may be discovered there.

At Brotherton and Sunday Lake, on the Eastern Gogebic, both bought from Joseph Sellwood a year ago, shafts are being sunk deeper and a most excellent plant of new machinery has been installed, which will increase tonnage and diminish costs considerably.

On the Menominee range the company operates several mines. In the Iron River district it has the Caspian mine. This property has been recently equipped with a very good machinery plant, but its product this year will be small, for the overlying sandstone is very wet, and until it has been drained there is little chance for a large output. The mine has been opened and is to be a considerable producer later. Baltic is a comparatively new mine, having been explored as recently as 1900. There is a large deposit of fairly good non-Bessemer ore and the shipment this year will be about the same as in 1904. At the Vivian another lift is being sunk and the product will be slightly increased.

At the "old reliable" Hemlock at Amasa the shaft is being dropped and the product will be increased. This mine has been a steady shipper for a long period, but its ore is not high grade. In addition to these Menominee mines the company is conducting four explorations there, with fair prospects.

In the Felsh Mountain district Calumet mine, reopened two years ago by G. A. St. Clair of Duluth, has been taken over and is being developed for a small product this year. Its ore is a silicious lean Bessemer, and there seems to be a good deal of it.

In the new Deerwood or Cuyuna district of Minnesota this firm has the only property at which any development aside from drillwork has been attempted. Underground opening is not looking very well and it will be some time before the mine is a producer. It has some ore running about 52 per cent. non Bessemer.

D. E. W.

The Charing Cross Roof Failure. — Matheson & Grant, London, England, the well-known engineers, in their annual review of January 1 refer to quite a number of interesting topics. Following is an extract regarding a recent London disaster: "The recent failure, with loss of life, of a portion of the iron roof over Charing Cross Station need cause no alarm in regard to roofs in which proper and available precautions are taken. A faulty weld, aggravated by rust, was the apparent and probable cause. Welds can and should be avoided in such structures, and so should even smith's work where steel is the material. Easy and convenient access should be provided to all parts for examination, and no part exposed to the air should be beyond the reach of the painter's brush. Unfortunately, however, there are too many structures in which the designers seem to consider only the primary purpose of a roof covering strong enough to withstand stresses from wind and snow, and in which no allowance is made in the factor of safety for the contingency of waste by rust. All these precautions are even more necessary in modern steel structures than when the bars or plates were rolled from puddled iron, of which the Charing Cross roof was constructed 40 years ago."

The Engineers' Society of Western Pennsylvania. —The twenty-ninth annual meeting of this society was recently held in Pittsburgh, and the following officers were elected: Julian Kennedy, president; J. K. Lyons, vice-president; F. V. McMullen, secretary, and A. E. Frost, treasurer. The treasurer reported a balance of $1,322 and an invested surplus of $7,200. The secretary's report showed a membership of 950, but on the recommendation of the board of directors the society dropped 59 members for non-payment of dues. The retiring president, Samuel Diescher, made an address on the great strides in business, manufacturing and commercial life due to the achievements of engineering within the past 40 years.

A New Sterling Tool Grinder.

One of the latest products of the Sterling Emery Wheel Mfg. Company, Tiffin, Ohio, is the 14-inch tool grinder illustrated. It is particularly one prepared to sell at a moderate price in competition with ordinary grindstones, over which it claims the superiority of longer life. The 2 x 14 inch wheel with which it is fitted is of a special material and is believed to be capable of outwearing a grindstone of four times its size and at the same time to give better satisfaction.

The machine is simple in construction and has no pumps to get out of order. A special device arranged

A New 14-Inch Tool Grinder Made by the Sterling Emery Wheel Mfg. Company, Tiffin, Ohio.

on the inside of the column carries an ample supply of water to the wheel when the machine is in operation. As soon as the machine is stopped the water all drains away from the wheel. This provision does away with a trouble experienced where a wheel stands idle with one side immersed in water. When the wheel is started up the soaked side, being heavier, gives it the appearance of being out of balance. This machine can also be used as a dry grinder in the ordinary way by throwing off the little belt on the left hand side.

The Buffalo Testing Laboratory has been incorporated at Buffalo, N. Y., for the purpose of furnishing expert engineering and chemical services to large industries on the Niagara frontier. The company has established offices at 702 Ellicott square and has a laboratory equipped for physical, chemical and electrical work adjoining the Buffalo Foundry Company's plant on East Ferry street. The president of the company is George A. Ricker, civil engineer, formerly representing the Pittsburgh Testing Laboratory in Buffalo; the vice-president is Prof. Nathaniel W. Shed, chemist and metallurgist of the Buffalo Foundry Company. The company has organized a bureau of inspection and testing and has also arranged to represent the Laboratory Testing Company of New York.

Green's Air Heater.

In principle a fuel economizer for heating boiler feed water with the waste gases in the furnace is practically identical with the air heater now built by the Green Fuel Economizer Company, Mattewan, N. Y. This heater might be most quickly described by simply calling attention to the points wherein it differs from an economizer. It is constructed substantially like an economizer, as will be seen from the illustrations, with the exception that the path of the air is not the same as that taken by water through an economizer. In the latter the water enters at the bottom header and passes out from the top header, whereas in the air heater the air is forced by a fan first down through one set of tubes and up through another set, and so on, down and up again, until it leaves the heater.

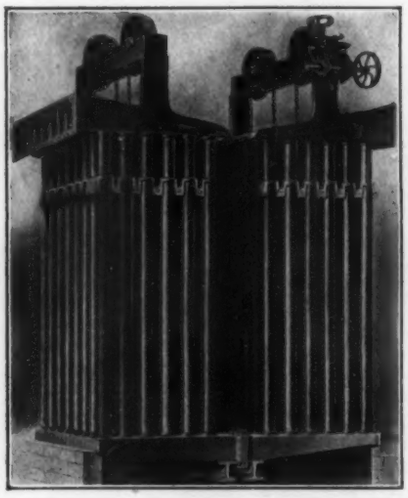

Fig. 1.—A 96-Tube Air Heater.

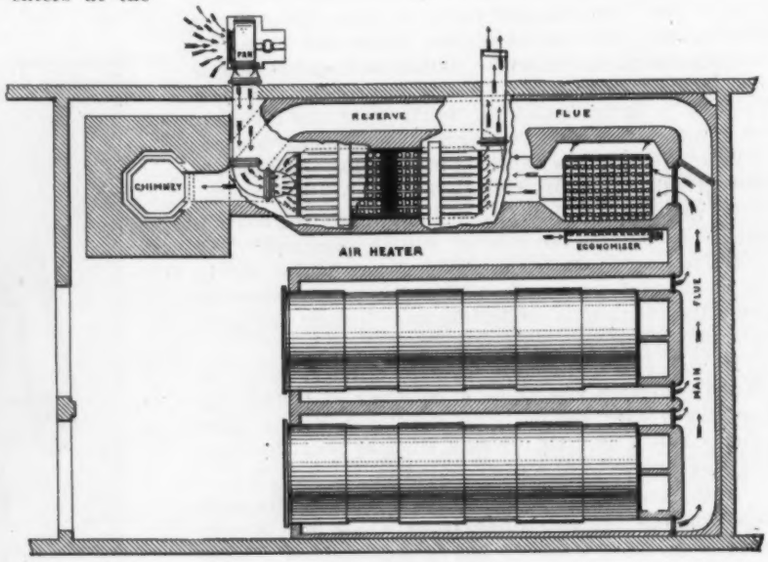

Fig. 2.—An Air Heater Installed with an Economizer.

The heaters are composed of units with a certain number of tubes, usually four or six to each unit. These in turn are assembled in sections with as many units to a section as may be required to pass the given amount of air with the proper velocity. The sections are connected in series, as in Fig. 1, which shows two sections of eight units each, with six tubes to each unit. The longer the path of the air through the heater—*i. e.*, the greater the number of sections—the greater will be the amount of heat it will absorb and the higher will be its temperature.

The tubes are of cast iron, 9 feet long between headers and 3⅞ inches in diameter inside. They are forced in the top and bottom headers or boxes by hydraulic pressure, no packing being used to secure tight joints. The boxes are of sloping form and varying interior cross section to insure a uniform velocity and distribution of the air to the tubes. The air is circulated at a good speed and being frequently redistributed through the tubes is not likely to short circuit or eddy, hence the most effective absorption of heat is obtained. Cold air from the blower enters the heater at the end where the flue gases leave to pass up the chimney and the heated air issues from the end nearest the boiler, where the gases are the hottest. Thus a uniform and high difference of temperature is maintained between the flue gases outside the tubes and the air inside the tubes, which is the condition required for the most rapid transfer of heat through a given amount of conducting surface.

In other respects the air heater and economizer are practically alike. They are built in the flue passages in the same way and are provided with scrapers which slide alternately up and down on the outside of the tubes to keep their surfaces free from soot. The driving arrangement for operating the scrapers is the same. Frequently it may be suitable to install an economizer and an air heater in connection with the same battery of boilers, as indicated in Fig. 2. Such is the case if there is more than sufficient heat in the flue gases to heat the necessary amount of air to the required temperature. An increase in economy may then be effected by utilizing the additional available heat in heating the feed water. If the gases will afford only sufficient heat for the air heating the installation may resemble the example represented in Fig. 3. The utilities of air heaters are many. In almost any building having a blower system of heating ventilating air heaters may partly or altogether take the place of steam coils for heating the air. In steam laundries, textile mills, breweries or grain stores, brick yards, &c., the heater air may be used for all manner of drying processes.

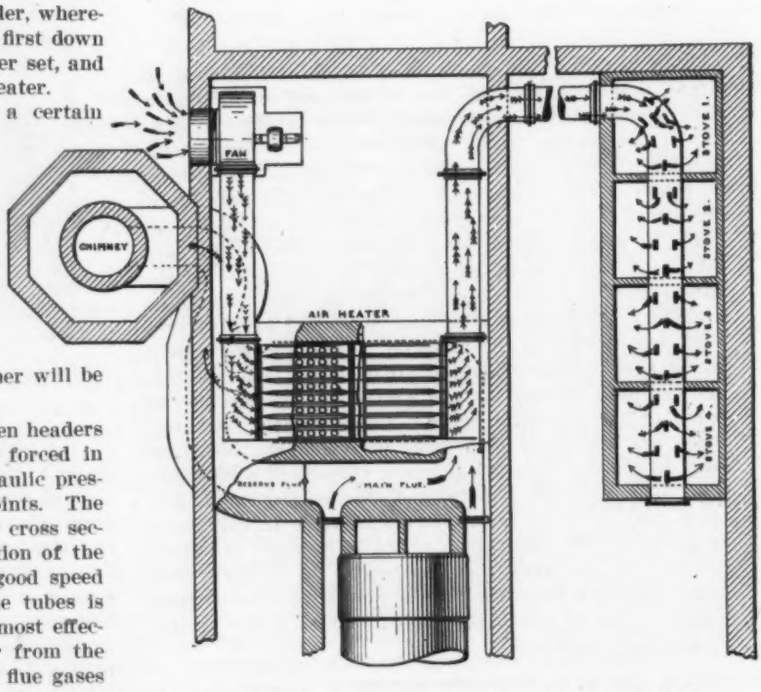

Fig. 3.—Air Heater with One Boiler, Suitable for Laundries.

A test made upon the plant illustrated in Fig. 2 gave interesting results. The economizer contained 144 tubes and the air heater 72 tubes. The following were the temperatures:

	Degrees F.
Gas entering economizer	460
Gas entering air heater	301
Gas leaving air heater	257
Water entering economizer	112
Water leaving economizer	248
Air entering air heater	70
Air leaving air heater	152

Air heated to a temperature of 152 degrees from ordinary atmospheric conditions will take up nearly 0.01 pound of air per cubic foot making it effective for drying purposes. The air heater in this plant is relatively small and by increasing the number of tubes a higher air temperature could easily be obtained.

American and British Building: Comparative Merits.

Probably few American contractors and builders who have not had experience abroad realize the width of the gap which separates English and American building practice. The difference was very clearly brought out in a recent meeting of the Royal Institute of British Architects, when a general discussion of the topic took place. The impulse was given by R. A. Denell, managing director of the Waring-White Building Company, in a paper entitled "American Methods of Erecting Buildings." The Waring-White Company is closely allied with J. G. White & Co., New York.

The topic of broadcast interest that came up for consideration was in many respects the Governmental and municipal jurisdiction over building obtaining in the two fields. It appears that in Great Britain each particular feature of a building must be passed upon by a separate bureau, and that the possible complications in gaining building permits are myriad. Mr. Denell is outspoken in his preference for the American municipal scheme of concentrated control of building in one department, and he was strongly seconded in this view by so conservative a member of the Institute as William Woodward.

Following this lead several speakers joined in a general condemnation of all Governmental control of architectural operations. John Slater said he feared that the relief from responsibility of the architects might lead to the ultimate demoralization of the profession, for the exercise of initiative was so thoroughly discouraged by hampering regulations. Andrew T. Taylor, late of Montreal, drew a very interesting distinction between the necessity of such supervision on the two fields. He personally had no doubt that rigid supervision over the British architect and builder might advantageously be abolished, but he was not at all sanguine of the advisability of such a step in America. In fact, he drew a very uncomplimentary picture of the professional integrity and even of the abilities of some American architects.

While the major portion of the leading paper that was devoted to building materials was given over to the steel structure, there was still much valuable matter on those materials which are used in common in the United States and England. Touching brick work, Mr. Denell conceded more artistic effects to America, but he was of the opinion that the English principle of a uniform bond conduced to structural superiority. The common English brick is considerably larger than the American—about the size of the American glazed brick, in fact. It appeared also that white limestone is the favorite for building in England as here, but in granite and marble they have not our variety from which to choose. There was no subsequent comment in the meeting on this score.

The widespread and artistic application of terra-cotta to building in this country was very decidedly commended, and several pictures were shown of examples of exterior decoration in the material on this side. Notable among these was the *Herald* Building. The British architect's principal excuse for delinquency in this particular is the inability to get out large blocks of the material. In interior decoration by means of terra cotta he has fallen behind, because paucity of varieties of clay prevents securing polychromatic effects.

Ornamental iron and bronze work is nothing like so extensively used in England as here, probably because it has not been fostered by a demand for fire resisting material such as exists in America. This point was a matter of merely descriptive comment on the part of the principal speaker, but the almost exclusive use of iron in fire proof staircase construction came in for a critical observation. In Mr. Denell's opinion we would do well to emulate the British concrete construction wherever it is applicable.

The steel frame in building, being the feature in which American and British practice are most widely divergent, naturally brought out the most extended discussion. It is, moreover, the feature of most interest to engineers as well as architects. In tone the general comment was manifestly a protest against the intrusion of an incongruity in the ancient field of architecture; an attempt to discredit the virtues of an institution inimical to the interests of architects of the old school. The leaders of British architectural progress, however, indicated in the meeting that they had learned the lesson taught to the conservative interests of the American school more than a decade ago; that the great steel frame building of to-day is the child of modern economic conditions, and as such inevitable.

Mr. Denell was particularly optimistic of the durability of the steel frame and of its stability, even when carried to great hights. He thought that the 40-story skyscraper was entirely feasible from the structural point of view, but did not anticipate such a development because of economic restrictions. In his opinion the point must soon be reached when the revenue accruing from additional stories will not pay for the consequent consumption of space in the lower floors by increase of plant. Those operating in the field of the skyscraper will appreciate from this observation of a leading British exponent just how difficult it is to accurately foresee developments in a field without a basis of actual experience there. Most Americans will agree with Mr. Denell, though, that conditions of modern life are changing faster than buildings depreciate, thereby necessitating rebuilding before the natural life is run. In conclusion, the speaker expressed the belief that the steel structure was as enduring as any other class of building and more so when carefully imbedded in concrete.

Australia's Labor Laws Cause Employers to Favor Protection.—Australian newspapers claim that the feeling in favor of a protective policy in that commonwealth is strong and rapidly growing, particularly in the engineering and iron working trades. The Melbourne *Age*, in commenting on this subject, says: "Fifteen years ago the south side of the river was a hive of industry, firms like Langland's Foundry, Campbell & Sloss, David Munro & Co. and Pye & Campbell each employing several hundreds of men. These firms have vanished, and the premises, where they exist, are now used as stores for imported or second-hand machinery. The surviving firms, such as the Austral Otis Engineering Company, the Lion Rolling Mills, Robinson Bros. & Co. and Forman's Engineering Works, with a few others, are kept going chiefly on repair work, or on contracts wanted in a hurry, and employ only one tithe of the number of men who were kept going prior to the reduction of duties. On cast iron pipes, under the old Victorian duty of £3 per ton, the foundries had always work on hand; now, with a 12½ per cent. ad valorem duty, imported pipes are landed in Melbourne at a less price than the cost of local manufacture. The Engineers' Society had formerly a membership of 1400; now it has 700, and with many of them employment is not constant. The remedy unquestionably lies in the imposition of duties which will enable Australian manufacturers to pay the wages enforced by the Factories Act and give them a chance to compete with the cheaper labor of the Old World."

The Great Lakes Engineering Works, Detroit, Mich., now has nine boats under contract for 1906 delivery. Three are for the Cleveland-Cliffs Iron Company, Cleveland; two for the Jones & Laughlin Steel Company, Pittsburgh; one for the Globe Steamship Company, Duluth; one for the Shenango Steamship Company, Cleveland; one for Jas. W. Ellsworth & Co., Cleveland, and a dredge for the Dunbar & Sullivan Dredging Company, Amherstburg, Ontario. The boat for Ellsworth & Co. is a carferry of 30 cars capacity for lake service. The first seven mentioned are all of the same size and of 10,000 tons capacity each.

Tariff Relations with Germany.

WASHINGTON, D. C., January 16, 1906.—The tariff issue, with special reference to our relations with Germany, has been forced to the front during the past week and is now occupying the attention of the leading members of the Finance and Ways and Means committees. The protracted tariff discussion in the House over the Philippine bill, which is now in its third week, has served to draw attention to the subject in all sections of the country and the debate has covered a broad field, embracing all the principal schedules as well as the basic principles of reciprocity and retaliation.

Retaliation Policy.

The principal development of the week has been the determination of the majority leaders of both houses to take up for early consideration a bill designed to clothe the President with power to retaliate upon the commerce of Germany if the maximum rates of the new German tariff are imposed on American products on and after March 1 next in accordance with the notice which the German Ambassador has already served on the State Department. This decision has not been reached hastily, but represents the conclusions of the leaders after repeated conferences with the Secretary of State, who has devoted a great deal of time and attention during the past three months to an effort to induce the Finance and Ways and Means leaders to consent to the negotiation of a reciprocity treaty with Germany that would guarantee our products against the imposition of practically prohibitory rates of duty. Secretary Root's original effort was to obtain assurances that a comprehensive treaty would be ratified by the Senate and approved by the House, and after it became apparent that this was a hopeless task he took up the subject of a *modus vivendi* on lines heretofore described in this correspondence. Here, however, he encountered an evident reluctance on the part of the German Government to consent to the extension of the existing treaty of 1900 on terms at all acceptable to the United States, and there now seems little prospect that the imposition of the maximum rates of the German tariff can be prevented without the enactment of legislation especially designed to meet the emergency.

In this situation the Senate leaders are giving thought to the drafting of a retaliatory measure. While revenue legislation as such must originate in the House, there are numerous precedents under which the Senate might take the lead in such an emergency as that now existing, and there is a disposition on the part of the Administration to look to the Finance Committee to frame and report a bill in advance of action by the House. There is now before that committee a bill drawn by Senator Lodge and introduced early in the present session. It provides not only for the assessment of retaliatory duties but also for concessions to be made by treaty. The text is as follows:

When any country discriminates against any article or articles, the growth or product of the soil or industry of the United States, by levying upon such article or articles duties, imposts, excises or taxes in excess of those levied upon similar articles imported from other countries, or further in any way fails to admit the products of the United States on terms as favorable as those accorded to any other nation, then there shall be levied and collected upon all articles, the growth or product of the soil or industry of the country so discriminating against the products of the United States, duties .... per centum in excess of those now established by law.

Sec. 2. That when any country admits any article or articles, the growth or product of the soil or industry of the United States, on an exact equality with similar articles, the products of other countries, and on the terms and at the rates of duty accorded to the most favored nation, then all articles, the growth or product of the soil or industry of such country, shall be admitted to the United States at rates of duty .... per centum less than those now established by law.

It will be noted that Senator Lodge does not specify the amount of the retaliatory duty that may be levied by the President upon the goods of countries discriminating against the United States, nor does he state the amount of the concession to be made to those granting to our products the most favored nation treatment. These rates are to be fixed by the Finance Committee and it is the general impression that a retaliatory rate of 25 per cent. will be specified. With regard to the second section of the Lodge measure, there is a general disposition to strike it out and to provide no new basis for the negotiation of reciprocity treaties, at least until the controversy with Germany has been finally disposed of.

The McCleary Proposition.

In the House the attention of the Ways and Means leaders is being centered upon the McCleary bill, providing for the amendment of the Dingley act by an addition to section 5, which is commonly known as the countervailing section, and which now authorizes the levying of additional duties upon articles exported from foreign countries with the benefit of a bounty, direct or indirect. Mr. McCleary proposes to add to this section the following provision:

When any country, dependency or colony discriminates against any export or exports of the United States, the growth or product, in whole or in part, of the soil or industry of the United States, by levying thereon duties, imposts, excises or taxes in excess of those levied upon similar articles exported from any other country, or in any way fails to admit the products of the United States on terms as favorable as those accorded to the products of any other country, then there shall be levied and collected upon all articles coming into the United States, the growth or product of the soil or industry of such country so discriminating against the products of the United States, duties 25 per centum in excess of those imposed by this act; and all articles, the growth or product of the soil or industry of the country so discriminating against the products of the United States which by this act are admitted free of duty shall be subject to duty at the rate of 25 per centum ad valorem. The fact of such discrimination shall be ascertained, determined and declared by the Secretary of the Treasury, who shall make all needful regulations for the identification of such articles and for the assessment and collection of such additional duties.

Mr. McCleary has introduced another bill identical with the first section of Senator Lodge's bill, but he is disposed to favor the measure above quoted as the simplest and most effective method of providing the desired legislation.

The minority members of the House have not been slow to take advantage of the German crisis to urge the enactment of a new basis for reciprocity treaties. Representative Williams, the minority leader, has introduced several bills which have heretofore been described in this correspondence. The latest contribution to this class of propositions has come from Representative Gilbert of Kentucky, who has presented a bill reviving section 4 of the Dingley act, under which the reciprocity treaties with France and other countries were negotiated by Commissioner Kasson prior to 1899. None of these treaties has been ratified, and inasmuch as the Dingley act specified that section 4 should remain in force but two years, it is commonly held to have become void on July 24, 1899. It authorizes the President to negotiate reciprocity treaties on the basis of concessions by the United States of not to exceed 20 per cent. in any of the schedules of the existing tariff, but stipulates that such treaties shall be ratified by the Senate and "approved by Congress" before being proclaimed. There is considerable force in the contention of the Republican leaders that this provision is merely declaratory and that the President has authority to negotiate such treaties without the direction of Congress, provided always the conventions are submitted for ratification and approval before being proclaimed. The evident purpose of the minority leaders is to force the majority into a position where choice must be made between directing the President to make a new series of reciprocal trade agreements or of discrediting the reciprocity provision of the Dingley act.

Early Action Expected.

Action with regard to the German situation is looked for within a very short time. The Philippine tariff bill will probably pass the House during the present week and may possibly be made the basis of an amendment by the Senate clothing the President with power to retaliate upon German commerce. If contrary to the policy of the majority leaders such an amendment would probably be regarded as nongermane; otherwise it would be accepted in default of a point of order against it. The interests filibustering against the Philippine bill are seeking to load it down with amendments, including a provision for

entry of iron and steel products from foreign countries by way of Philippine ports at 50 per cent. of the rates of the Dingley act, but the majority leaders intend to rule out all such propositions and predict that the Philippine bill will go to the Senate in satisfactory shape for its passage by that body. W. L. C.

Niagara Falls Developments.

NIAGARA FALLS, N. Y., January 15, 1906.—The year 1906 opens with bright industrial prospects for Niagara Falls, N. Y., as well as for Niagara Falls, Ont. Of late years public attention has been more riveted on the power development on both sides of the river than it has on the coming of new industries, but now that a wealth of power is available it is evident that industry must be stirred to utilize it or the great and wonderful development will be of little effect.

The Niagara Falls Hydraulic Power & Mfg. Company promises to do its share in the upbuilding of the new year by erecting a fine new power station at the water's edge on the New York side of the river. This station will have an output capacity of over 100,000 horse-power and will be the largest station yet attempted by this company, while it will also be, when completed, the largest station in point of output on the New York side. In no other winter season has so much been accomplished in construction work at Niagara as recently, and this company has availed itself of every hour. It is from the new power house that the new aluminum works will receive power for its operation, and power will also be transmitted to the company's new industrial section at the north end of the city, where new industries are likely to locate.

The Acker Process Company is a tenant of the Niagara Falls Hydraulic Power & Mfg. Company, and will expend $20,000 in an addition to its works for the manufacture of caustic soda and bleaching powder, which will make its capacity one-third larger than at present.

It is not likely that the Pittsburgh Reduction Company's new aluminum plant will get started this year, but when ground is broken it will be hurried to completion, so that in 1907, at latest, the output of the popular white metal of Niagara will be very greatly increased.

Ever since they were built the Niagara factories have been frequently enlarged, and one of the reported improvements at Niagara is to the effect that the Norton Emery Wheel Company will increase its facilities for the manufacture of alundum.

The Siloxicon Articles Company has erected an experimental plant on the lands of the Niagara Falls Power Company, and it is understood that early in the spring it will start the erection of a very large new plant for the manufacture of siloxicon products. It is sincerely believed that the siloxicon industry is destined to be one of the largest at Niagara Falls. Its discoverer, Edward G. Acheson, gave carborundum and manufactured graphite processes to the world, but siloxicon appears likely to outdistance both in popular favor. Experiments made have been surprisingly successful and encouraging.

On the Canadian side the year 1906 finds two companies generating power, while the third is hurrying its work so that it will be in the field during the summer. The companies that have generators moving are the Canadian Niagara Power Company and the Ontario Power Company. The first named company contemplates the construction of a new transmission line along the Canadian side of the river to Fort Erie, where the cables will cross to Buffalo. The second will supply a large volume of power to the Niagara, Lockport & Ontario Power Company for transmission into the interior of the State of New York. The third, the Electrical Development Company of Ontario, Limited, is the company that will send some of its power output to Toronto over the transmission line of the Niagara & Toronto Power Company.

Since it became possible to develop electrical power at Niagara Falls in large units capital has been generous in investing in power plants and their development. The world is somewhat amazed at the amount of energy it is proposed to take from the river, for the proposed development is magnificent in its entirety. The agitation against further development of Niagara Falls power has become very pronounced, and yet in 15 years a new water power development has not been started on the New York side, the last ground breaking that resulted in anything having taken place October 4, 1890. Of course it is different on the Canadian side, where three great developments have been started within a few years. It is predicted that this development on the Canadian side will ultimately put the American Fall out of business, as the river bed of the American channel is somewhat higher than the channel that leads to the Horseshoe or Canadian Fall. On the New York side the power stations are well away from the falls, but on the Canadian side they are so grouped as to nearly all be visible in viewing the spectacle of nature. Thus, both in location and in prospective results, the sin against the scenic beauties of Niagara appears to exist wholly on the Canadian side of the river. If this is admitted the remedy must be sought through the Ontario or Dominion governments, Toronto or Ottawa, and not Washington or Albany. An international agreement is talked of, and it is likely that it is the only way in which to successfully regulate the application of the Niagara waters to industry, but as a basis of the agreement it would appear necessary to give New York as much water for its power developments as Canada contemplates taking and this will give New York State an additional development of about 300,000 electrical horse-power. While the agitation about the power development is in progress, or forms the subject of correspondence or negotiations between the two countries the industrial advancement of the Niagara locality may suffer.

The Pacific Coast Trade Outlook.

SAN FRANCISCO, Cal., January 6, 1906.—The conditions are fair for the best year in hardware and metals that the Pacific Coast has ever had. This city is growing at the rate of 8 per cent. annually. Its suburbs, including Oakland, Alameda, San Mateo, Berkeley and other small cities, are growing faster still. The increase is still greater in the south. During the past year the value of the new building contracts in San Francisco was $20,111,861, and taking in all the State the total will not fall short of $60,000,000 in building alone.

There will be greater activity in the lumber districts of California this year than ever before, and the production of redwood and pine may exceed 1,000,000,000 feet. The Western Pacific and the other railroads have called for contracts involving close to 5,000,000 railroad ties, while the Eastern demand for redwood lumber has more than doubled during the past couple of years. Hence there will arise a great demand for every description of saw mill machinery, engines, wire cables, etc. At different times during the year there has been a shortage of vessels, and there will be quite a fleet of steam schooners built and placed in commission this year. This will call for a large amount of machinery, too, the estimate for each vessel averaging $40,000. In the oil fields there will be a great demand for the tools and machinery needed in the sinking and development of wells, &c., and manufacturing tanks and other supplies.

J. O. L.

The New England Pig Iron Market.—J. Brooks Fenno & Co., 44 Kilby street, Boston, Mass., in last week's letter to their customers have the following to say regarding the business outlook: "There are several large orders pending, as many foundrymen who supposed their requirements were covered for the second quarter have discovered that owing to increased melts they will be obliged to purchase again considerably sooner than anticipated. The majority of the consumers whom we have interviewed during the past few days report that they are doing a heavy volume of business and are melting 25 per cent. more material than a year ago, with plenty of new orders in sight, and the prevailing opinion appears to be that, barring unforeseen contingencies, the present year will prove to be one of the best on record."

The Connellsville Coke Trade in 1905.

The Connellsville *Courier* of January 12 contains an exhaustive review of the Connellsville coke trade in 1905, from which we take the following:

The Connellsville and Lower Connellsville regions in 1905 produced an aggregate of 17,896,526 net tons. This breaks all previous records by several million tons. The aggregate production of the two regions in 1904 was 12,427,468 tons. In 1903 the output was nearly 1,000,000 tons greater than in 1904. In the two years from 1902 to 1904 there was a slump in the regions' production of 1,700,000 tons. This year the shortage was more than made up. The year started well and production held up throughout the whole 12 months.

The following tabulated statement shows the total number of ovens at the close of each year, the annual output, average price and gross revenue of the regions from 1880 to date:

Year.	Total. ovens.	Net tons shipped.	Average price.	Gross revenue.
1880	7,211	2,205,946	$1.79	$3,948,643
1881	8,208	2,639,002	1.63	4,301,573
1882	9,283	3,043,394	1.47	4,473,889
1883	10,176	3,552,402	1.14	4,049,738
1884	10,543	3,192,105	1.13	3,607,078
1885	10,471	3,096,012	1.22	3,777,134
1886	10,952	4,180,521	1.36	5,701,086
1887	11,923	4,146,989	1.79	7,437,669
1888	13,975	4,955,553	1.19	5,884,081
1889	14,458	5,930,428	1.34	7,974,663
1890	16,020	6,464,156	1.94	12,537,370
1891	17,204	4,760,665	1.87	8,903,454
1892	17,256	6,329,452	1.83	11,598,407
1893	17,513	4,805,623	1.49	7,141,031
1894	17,834	5,454,451	1.00	5,454,451
1895	17,947	8,244,438	1.23	10,140,658
1896	18,351	5,411,602	1.90	10,282,043
1897	18,628	6,915,052	1.65	11,409,835
1898	18,643	8,460,112	1.55	13,113,179
1899	19,689	10,129,764	2.00	20,259,528
1900	20,954	10,166,234	2.70	27,448,832
1901	21,575	12,609,949	1.95	24,589,400
1902	26,329	14,138,746	2.37	33,508,714
1903	28,092	13,345,230	3.00	40,035,906
1904	29,119	12,427,468	1.75	21,748,069
1905	30,842	17,896,526	2.26	40,446,149

At the close of 1904 the Connellsville regions were making nearly 325,000 tons of coke a week. There were 29,119 ovens in the two districts. At the close of 1905 there were 30,923 ovens in the regions and the estimated weekly production was 376,978 tons. It will be seen that during the year there was a gain of over 50,000 tons a week in production.

There were 20,987 ovens active and 1724 idle at the close of 1904, while the first of this year saw 22,186 active ovens and but 1127 out of blast. January, February and March drifted along with no especial features to the coke trade. In January production ran about 1,115,000 tons. In February there was an apparent gain of but 10,000 tons and the following month tonnage jumped 20,000 tons. April showed up big. Demand went wild. Production jumped nearly 300,000 tons. Shipments were correspondingly large. In May there was a break and a slump of over 200,000 tons. June was about the same. July saw a production of 1,230,000 tons. There was a good sized loss in August, always rated the hottest month of the year and a time when furnaces are inactive. September, October and November saw production well over 1,000,000 tons each month and in December tonnage again shot up.

The daily average shipments in 1905 were 1886 cars. There were several months during the year when they averaged over 2000 cars a day. In 1904 the daily average was only 1623 cars. In 1903 it was 1782 cars; in 1902, 1986 cars, and in 1901, 1856 cars. It must be taken in consideration, however, that the size of cars in which coke is transported from the ovens to blast furnaces has greatly increased. A few years ago cars averaged but 18 tons to the car. There are steel coke cars hauling coke out of the Connellsville district now that carry 50 tons. The small wooden car still keeps the average down, but it can be safely put at well over the 20-ton mark.

The following table shows the shipments for 1905 by months in cars and tons, with the daily average shipment:

Month.	Cars.	Daily average.	Net tons.
January	49,352	1,592	1,283,152
February	51,928	1,856	1,350,128
March	57,606	1,858	1,497,756
April	70,904	2,367	1,843,502
May	55,829	1,801	1,451,554
June	52,095	1,736	1,354,470
July	62,423	2,014	1,622,998
August	51,077	1,648	1,328,002
September	66,413	2,214	1,726,734
October	55,009	1,774	1,430,238
November	57,267	1,909	1,488,942
December	58,425	1,885	1,519,050
Totals	688,328	1,886	17,896,526

The 30,000 men engaged in the coke business were granted one wage advance during the year. It was announced by the H. C. Frick Coke Company, effective March 1. All of the other companies in the Connellsville and Lower Connellsville regions followed the action of the Frick company and announced similar advances.

While the production of coke greatly increased in the Connellsville regions during the last year the demand gained correspondingly. There are a number of new furnaces in blast and the number active during 1905 was greater than in 1904. The capacity of consumption of the United States Steel Corporation is also increasing rapidly, which accounts for the building of additional plants by the Frick and allied companies of the Steel Corporation. In the Connellsville regions in 1905 there was an actual gain of but 602 ovens. Upward of 1000, however, which were credited in last year's annual review went into blast during the year. The three big works of the Frick Company—Yorkrun, with 500; Bittner, 200, and Brinkerton, 240 ovens—are now complete and in operation. The Frick Company during the year took over 1072 ovens of the Hecla Coke Company. While the coke made at these ovens is taken by the Frick Company and its management directed by the Frick executives, the identity of the company is maintained. The Rainey interests the latter part of the year purchased a big block of 9-foot Connellsville coal from J. V. Thompson near Uniontown, which effectually put at rest many rumors that had been current that the Frick Company was negotiating for the Rainey ovens. Over $1,500,000 was paid for the Thompson coal. The Rainey interest will continue to be a factor in the Connellsville region as the second largest producer of coke.

Apropos of the celebration of the semicentennial of *The Iron Age* Joseph H. Springer, Sr., Galt House, Louisville, Ky., writes: "I went as apprentice to E. C. Statsenburg, who had a large foundry and machine shop in Wilmington, Del., in the spring of 1850, nearly 56 years ago. During the Civil War I was in the foundry business in Philadelphia, afterward became mechanical engineer of the Bethlehem Iron Company under John Fritz, then shop superintendent of the Edgemoor Iron Company, Wilmington, Del.; for eight years was superintendent of the Keystone Bridge Company, Pittsburgh, Pa.; for nine years was superintendent of the Niles Tool Works, Hamilton, Ohio; for four years was superintendent of the works of Fraser & Chalmers, Chicago, and for the past five years have made Louisville my home. On August 21, 1906, I will be 72 years of age and am still in good health."

Statistical comparisons are often misleading, but they are usually interesting and contain food for reflection. In this connection figures for the year 1904 for railroads in different countries show great diversities of values.

	United States.	England.	Germany.	France.
Freight rate per ton mile, cts.	0.58	2.32	1.42	1.55
Capitalization per mile	$61,400	$277,500	$104,700	$143,000
Traveling distance for average day's wage, miles	65	35	53	40

The last item affords a direct comparison which has more value than have the others; the figures for Belgium, Italy and India are respectively 36, 38 and 21 miles. Of gross earnings, 40 per cent. in United States goes to labor, 25 per cent. to capital; in England, labor gets 27 per cent., capital 38 per cent.; in Germany the division is about equal.

Trade Publications.

A Gear Plant.—R. D. Nuttall Company, Pittsburgh, Pa. Pamphlet. Contains a few facts concerning the plant and equipment, but is mostly taken up with views in the different departments and illustrations of the rough and finished product, spur and bevel gears and pinions and a specialty, Union standard trolleys for electric cars.

Crane Motors.—Northern Electrical Mfg. Company, Madison, Wis. Bulletin 32. Describes a line of box type motors, especially adapted for crane and hoist service, in which the conditions are extremely severe. The equipments are so inclosed as to make them dust proof and some times weather proof. The motors have exceptionally large armature shafts and liberal bearings, and all parts are compactly arranged and readily accessible.

Boring Mills.—Gisholt Machine Company, Madison, Wis. Loose leaf, pages 39 and 40. Shows three different methods of aplying motor drive to vertical boring mills.

Electric Motors.—Emerson Electric Mfg. Company, St. Louis, Mo. Two bulletins. No. 3107, superseding 3062, deals with single phase induction motors of two types adapted for full load automatic start and light load automatic start, made in sizes of 1-40 to 1-20 horse-power. No. 3953 describes an electric motor equipped with revolving brush used for washing bottles in small dairies and bottling establishments where the volume of work does not warrant the installation of an automatic bottle washer.

Stone Channelers.—Ingersoll-Sergeant Drill Company, 11 Broadway, New York City. Catalogue 60. Devoted to stone channeling machines. Several illustrations show the types H8 and H9 track channelers. Following a general discussion of the history and general features of the machines there is a detailed description of the parts, with illustrations of each, showing several special machines for stone cutting, including swing back marble channelers, "Broncho" channeler and an undercutting track channeler.

Gasoline Engines.—Challenge Company, Batavia, Ill. Catalogue. Size, 6 x 9 inches; pages, 32. Devoted to a description of the construction of the Challenge gasoline engine, the excellent features of which are fully explained. Illustrations show the vertical and horizontal patterns and detail parts, such as valve motions, speed regulator and other working parts, and the engines are also shown combined in various ways for operating pumping engines, portable power outfits, &c. Horizontal self contained engines are made in 2½ and 3½ horse-power sizes; vertical self contained in 3 and 4½ horse-power sizes, and larger horizontal engines up to 15 horse-power.

Electric Hoists.—Yale & Towne Mfg. Company, 9-15 Murray street, New York. Catalogue. Illustrates and describes briefly portable electric hoists, made in sizes of 1, 2, 4 and 6 tons. The distinctive features of these hoists are their compact construction and portability. They are as easily shifted from place to place as a chain block and may be used wherever current is available. This same catalogue also describes briefly trolleys built of steel, plain, hand geared and motor driven types.

Rail Bonds.—American Steel & Wire Company, Rookery Building, Chicago. Pamphlet. Illustrates Crown and United States terminal stud rail bonds, soldered rail bonds, twin terminal rail bond and equipment for applying the bonds to rails, including brazers, clamps, hydraulic compressors, screw compressors and grinding machines.

Electrical Equipment.—General Electric Company, Schenectady, N. Y. Various publications. Bulletin No. 4421 describes the G. E. 80 railroad motor; bulletin No. 4422, portable substations for electric railroads; flyer No. 2167 describes plug cut outs for 125 and 250 volts; flyer No. 2168, incandescent lamp sockets for outdoor decorations. Supply catalogue No. 7593 lists parts of form 3 twin carbon 220-volt direct current multiple inclosed arc lamps. Publication 3366 illustrates the various forms of Edison incandescent lamps.

Steam Turbines.—General Electric Company, Schenectady, N. Y. Publication No. 9137-2. Size, 8 x 10½ inches; pages, 30. Illustrates a number of representative installations of Curtis steam turbines, with brief references covering information concerning capacities, where and how installed, &c.

Wood Working Machinery.—Chattanooga Machinery Company, Chattanooga, Tenn. Catalogue. Confined to machinery for making insulator pins, brackets and cross arms. The description attending each illustration is exhaustive. One of the latest machines is shown on an inset, this being a No. 4 pin and bracket machine.

Ball and Roller Bearings.—Standard Roller Bearing Company, Forty-eighth street and Girard avenue, Philadelphia, Pa. Catalogue No. 12. Size, 4½ x 7 inches; pages, 88. The introduction calls attention to the wide variety of bearings manufactured for all kinds of service, and descriptions and price-lists follow of journal roller bearings, self contained roller bearings, extra heavy journal roller bearings, agricultural roller bearings, roller motor bearings, roller bearing shaft hangers and pillow blocks, tapered and plain roller thrust bearings, conical roller bearings, roller side bearings for railroad cars, tool steel balls, ball thrust and step bearings, ring or annular ball bearings, self contained ball bearings, &c. The last few pages contain illustrations of a number of typical applications of roller and ball bearings.

Hydraulic Accumulators.—Watson-Stillman Company, 46 Dey street, New York City. Sectional catalogue No. 67. Size, 6 x 9 inches; pages, 54. A collection of selected sheets particularly relating to hydraulic accumulators and fittings. A variety of types of accumulators are shown which for convenience are classified as plain cylinder, inverted cylinder, yoke cylinder, plain variable pressure, differential ram, hydro-pneumatic, intensifier and steam pressure or steam loaded types. Under each of these types there are numerous subclassifications and a sheet is devoted to each machine, giving an illustration, a short description and a table of dimensions. The remainder of the pages are concerned with auxiliary equipment, including accumulator pump release actions; balance by-pass valve; release, governing and check valves; shock alleviators; hydraulic pipe and packing.

Engine Lathes.—Schumacher & Boye, Cincinnati, Ohio. Specification sheets. Contain engravings and dimension tables with short descriptions of the following: 18, 24, 26 and 28 inch instantaneous change gear engine lathes with three-step cones and double back gears; 30 and 32 inch instantaneous change gear engine lathes with four-step cones and double back gears; 32, 36 and 42 inch triple geared instantaneous change gear engine lathes and a 48-inch triple geared engine lathe with new instantaneous change gear device for feeds and screw cutting.

Rock Drills.—Chicago Pneumatic Tool Company, Chicago, Ill. Catalogue No. 18. Size, 6 x 9 inches; pages, 66. Deals with a line of rock drills for general quarry and mining work. This line embraces an extension to the business of the company since it acquired the selling rights to the McKiernan rock drills, manufactured at Dover, N. J. In addition to the Chicago-McKiernan rock drills the catalogue shows Chicago-Keller plug drills, Chicago stone surfacer, Boyer riveting hammer and the improved Chicago rock drills.

Steam Traps.—E. F. Houghton & Co., 240 West Somerset street, Philadelphia, Pa. Catalogue. Deals with the Marck steam trap and is of particular interest in that it shows the principal methods for applying it, as well as a few to avoid.

Engines.—Westinghouse Machine Company, East Pittsburgh, Pa. Catalogue. Size, 6 x 9 inches; pages, 36. Devoted to the Westinghouse standard steam engine, which is intended for all service where a simple noncondensing engine is suitable. It is the familiar duplex single acting type which has been built by this company for about 25 years. For the benefit of those who are not familiar with its construction this catalogue has been prepared, covering the details and operation comprehensively.

Calendars.

The Kutztown Foundry & Machine Company, Incorporated, 116 North Broad street, Philadelphia, Pa., has issued a very attractive calendar entitled "Mamma's Caddie." The name part is played by a youngster carrying a golf bag and sticks. The mount is 16 x 20 inches in size; the picture a *fac-simile* relief photograph and the monthly calendar pad has large white figures on a black ground, making them easily distinguishable at a distance.

● Geo. G. Blackwell, Sons & Co., Limited, The Albany, Liverpool, England, are distributing a useful and handsome souvenir in the form of a red leather pocket case with compartments for cards, tickets, stamps, &c., and removable notebook sections. The latter may be used for a diary or engagement memoranda, and each one covers two months of the year. The covers of the booklet inserts contain the only advertising matter, which gives the name and subsidiary office addresses and a list of the firm's products.

William H. Wood, Media, Pa., has prepared a large hanger calendar, 18½ x 24 inches, that is essentially utilitarian. The 12 full sized sheets are half given up to the monthly calendar, while the other half contains engravings of hydraulic and other machinery designed by the donor. These include flanging machines, hydraulic presses and riveters, hand cranes, accumulators and steam hammers.

The Snare & Triest Company, 143 Liberty street, New York City, uses an interesting example of its own work in illustrating its 1906 calendar. This is a sepia tint half-tone view of the steel pier at Cienfuegos, Cuba. A heavy cover plate, having an opening which forms a frame for the picture, carries a calendar pad. The mount beneath the cover shows an engraving of the coaling pier at Frenchman's Bay, Maine, built for the United States Government.

The Atlantic Automobile Company and Machine Works, 12 and 14 South Carolina avenue, Atlantic City, N. J., is giving away a 15 x 20 inch heavy board calendar with large monthly date sheets and an 8 x 10 inch photograph of its store and shop, with a number of automobiles scattered about the entrance.

The Republic Iron & Steel Company, Chicago, has supplied its friends with a daily calendar pad for 1906 to fit the desk stand given out in previous years.

The Diamond Saw & Stamping Works, Buffalo, N. Y., has a pretty little calendar intended to be useful only at short range and choice enough to ornament any one's desk. A little girl in yellow stands against a background of wistaria and within a frame of green and gold. The advertising on its face is limited to the words, "Sterling Hack Saws. Best by Test."

THE IRON AGE

1855—1906.

New York, Thursday, January 18, 1906.

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHER
CHARLES KIRCHHOFF, - - - - - - - - } EDITORS
GEO. W. COPE, - - - - - - - - - } EDITORS
A. I. FINDLEY, - - - - - - - - - } EDITORS
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR

The Increase in Steel Foundry Capacity.

Information recently gathered by the American Iron and Steel Association relative to plants for the production of steel castings indicates a considerable expansion of the industry since June, 1904, when the last directory of the association was published. It appears that 12 new steel casting plants were completed and put in operation between June 1, 1904, and December 1, 1905, while those under construction in December, 1905, or for which definite plans were then ready to be carried out, numbered 15. Yet it is noticeable that in the past 18 months there have been no noteworthy additions to the ranks of the important jobbing steel foundries such as have capacities of from 1500 to 2500 tons a month. The majority of the new steel foundries, in fact, are of a class whose capacity for an entire year is less than the last named figure. They are small converter propositions or crucible steel plants devoted to small machine parts and in a considerable number of cases are adjuncts of plants making a special line of machinery into which the castings will enter. Recently the largest consumer of locomotive steel castings has announced plans for building its own steel foundry, but the prospect is not formidable to the jobbing steel foundries in view of the heavy orders they are constantly receiving from large locomotive builders, including an important plant that for some time has had the benefit of a closely related steel casting works. So great is the tonnage of steel castings now entering into a modern locomotive that a single steel foundry attached to a locomotive company would suffice for only a fraction of the castings required.

A few malleable or gray iron foundries here and there are putting in open hearth furnaces, so as to be in position to turn out steel, but such companies are making the steel end merely an adjunct. There is little indication in the present building movement of a disposition apparent at one stage of the development of the steel casting industry to rush into the jobbing trade under the belief that there are large profits to be made. The experience of 1904, when railroad and vessel work shrunk so amazingly, has been a strongly deterrent influence.

It is coming to be recognized more than ever that the casting of steel in sand molds is beset with difficulties that cannot safely be underestimated. The advance toward greater certainty in results has been made over the wreckage of many a promising enterprise. And today even the veterans in the business are far from being as sure of their competence to cope with some of its problems as when they started in. There is not the same uncertainty about the metal itself that still plagues the iron founder. The chemist has brought the methods of large steel works to bear, and successfully, on the questions of mixing and of heat treatment. But the molder's part of the work still has perils that try the very elect. The business has shown itself to be more and more one in which a seasoned and solidified organization is of paramount value. No doubt the tribulations over deliveries in years like 1899, 1902 and 1905 have brought a number of consumers to the decision to provide in part at least for their own requirements in steel castings, but even in such cases the programme contemplates calling upon the thoroughly equipped jobbing foundry for all large or particularly intricate work. Some of the offers made to experienced molders to attract them to newly starting steel foundries or to foundries that have started and have found how easily castings can be lost tell their own story of the difficulties that still beset the industry. The testimony of those who have been longest in it is that while experience lessens the liability to loss it is no guarantee against trouble on any departure from familiar lines of operation. Problems constantly arise for which there are no precedents.

But while so largely empirical, steel founding has made good advances in recent years, in the pressure for low cost put upon the shops in the dull times coming between the busy years. Organizations have been strengthened, additions have been made to secure the economies of larger tonnage and in certain cases special lines have been followed up until a proficiency has been acquired making it possible to underbid competitors following general jobbing lines. On the other hand the jobbing foundries that have widened their scope to the greatest extent have found that a multiplicity of lines is advantageous in slack times. The tendency to concentrate on railroad work made 1904 an extremely bad year with many foundries. But a plant and an organization equipped to handle all lines of work mean a heavy outlay and such concerns are the exception.

No cessation appears in the advance of steel castings into new fields. More and more locomotive parts are now cast in steel, even running board brackets being now on the list. The introduction of steel frames has been rapid and it is estimated that 75 per cent. of frames now entering into new locomotives are of steel. The adoption of frame specifications on the recommendation of a committee of railroad motive power superintendents, locomotive works managers and steel casting manufacturers has done much to facilitate this development. Perhaps the latest incursion of the steel foundry into the locomotive field is in the making of steel cylinders. A line of work in which iron founders have encountered no little difficulty in hitting on the right mixtures is the manufacture of pots for lead desilverizing and other refining operations and of pots used in various chemical works. The problem has been undertaken by steel founders recently and excellent results with the product are reported, the life of steel pots being much greater than that of cast iron under the severe service to which these castings are subjected. Important results have been attained recently also in the manufacture of nickel steel castings containing from 3¼ to 3½ per cent. of nickel.

The evidences are numerous not only that the production of steel castings in the United States is growing along with the general movement in iron and steel, but that the steel foundry is an increasingly important and efficient factor in meeting the requirements of modern engineering in every direction.

The Exact Quantity of Ore in the Hill Properties.

A few days ago the *Wall Street Journal*, commenting on the Hill iron ore holdings on the Mesaba range, stated that the Great Northern Railroad had 500,000,000 tons of ore in the ground, that the United States Steel Corporation had 600,000,000 tons and that all other interests had 200,000,000 tons, these making the entire amount of

iron ore in the district. These figures are a great deal more definite and precise than could be expected from any but a "long distance" writer. No one acquainted to any considerable degree with the facts would care to place himself on record as to the amount of ore that any one of the various factors on the Mesaba range may have in the ground. We doubt if the owners of these ore deposits have more than a very hazy idea of the tonnage that may come from their range lands. From the very nature of the situation it is impossible that they shall know this for many years to come.

However brilliant the *Wall Street Journal* may be in its special field, it sheds very little radiance when it approaches a class of facts so far outside of its own lines. The constant reiteration by New York papers of the figures 500,000,000 when referring to the tonnage of the Hill ore holdings seems to have given the public the impression that this is the exact amount held by the Great Northern Railroad and that can be leased to any operating interest with which Mr. Hill desires to place his ore. As a matter of fact, it will be difficult to count up anywhere near such an amount which is at present so thoroughly explored and developed that it is available for leasing by the Great Northern. To be sure, one cannot include a vast quantity of ore that is in part explored and may amount to some hundreds of millions of tons, if good luck attends further exploration. The Great Northern may have in the ground on the Mesaba range as much as 500,000,000 tons, but the overwhelming proportion of that which has been developed and is in shape to be measured is in the hands of private lessees and cannot be turned over to any new negotiating interest, the United States Steel Corporation or any other.

Steel Corporation Plants as Scrap Consumers.

Figures presented last week showed that the United States Steel Corporation in 1905 produced 10,175,505 gross tons of pig iron and 11,995,205 gross tons of steel ingots, the ingot production exceeding the production of pig iron by 1,819,700 gross tons. The pig iron produced contained some half million tons of carbon, silicon, &c., which was not present in the steel made from it, and there are other losses, particularly in the converter. Stocks of pig iron at the beginning and end of the year do not enter into the case, since the corporation was buying pig iron at both times. The corporation's purchases of pig iron from the outside, while much exploited, do not constitute a relatively large tonnage. They consist of regular purchases of basic for the Pencoyd Works, which has a rated capacity of 230,000 net tons of ingots, of low phosphorus and basic for New England, and occasional purchases of Bessemer or basic in the Central West, to be distributed as exigencies require to the various steel works in that territory. Last year the total purchases of outside pig iron were in the neighborhood of 400,000 tons, of which 263,000 tons were definitely reported as having been made in the Central West.

Adding to the pig iron produced by the Steel Corporation in 1905 the tonnage bought and deducting for the amount of material which was weighed in the pig iron but was not present in the steel and the amount actually lost in blowing and otherwise, there is shown to have been a gain of a quantity of material somewhere between 2,000,000 and 2,500,000 tons, and probably not far from midway between these figures. What was this material?

Leaving out of consideration the relatively small amount of ore used directly in the open hearth furnace the prompt answer would naturally be that the added material was scrap. The tonnage to be accounted for amounts to something like one-half the corporation's probable open hearth ingot production. The question, then, is as to where this scrap came from. Open market purchases have been inconsequential and exchange operations are not relatively important. The great bulk of this scrap was produced by the Steel Corporation itself. As far back as May, 1902, editorial reference was made in these columns to the fact that in order to find scrap for the basic open hearth process the United States Steel Corporation had adopted a definite policy of saving scrap from the Bessemer process instead of allowing it to be used on occasion to cool the heats, even paying considerable freights on scrap from detached Bessemer steel plants. The practice has also grown in recent years to crop ingots and material in process of rolling whenever the slightest excuse is found therefor, thus providing scrap of the best character and conducing to better quality in the finished product. There is little expense involved, some material merely forming a chain from the open hearth to the shear and back again. On each journey, however, it is weighed, and it thus appears in the ingot statistics and nowhere else. The United States Steel Corporation having unusually good facilities for this economical production and use of its own scrap, the latter doubtless cuts a larger figure in its statistics than in those of outside steel producers.

The Steel Corporation's statistics of pig iron and steel ingot production, with the difference between them, are shown in the following table:

	Pig iron. Gross tons.	Steel ingots. Gross tons.	Difference. Gross tons.
1902	7,975,530	9,743,918	1,768,388
1903	7,279,241	9,167,960	1,888,719
1904	7,369,421	8,406,378	1,036,957
1905	10,175,505	11,995,205	1,819,700

While the steel which the corporation produces differs widely in the form in which it passes out of corporation control, running from billets and sheet bars at one end to large tonnages of such highly finished products as wire, pipe and sheets, a comparison of steel ingot production, with production of finished material, in the form in which it was sold to outsiders, is not without interest. The figures of finished steel production not being available for last year, the comparison closes with 1904. The percentage of loss has been figured, based upon ingots:

	Steel ingots. Gross tons.	Finished material. Gross tons.	Percentage loss.
1902	9,743,918	8,033,556	17.6
1903	9,167,960	7,458,879	18.6
1904	8,406,378	6,792,780	19.2

The percentage of loss which will be shown by the statistics for 1905 will probably be still greater and continue the unbroken increase shown in the three years above cited. It should not be assumed without investigation that the manufacture of scrap is increasing in the same ratio; the average degree to which the corporation's products are finished may have increased.

Compulsory Education in the Shops.

The decadence of the apprentice system and the consequent evils appear to extend wherever modern methods of manufacturing are employed. The United States is feeling the first real pinch of it in a scarcity of skilled workmen the like of which has never been experienced before. England is striving to alleviate conditions said to be even worse than in America by the encouragement of industrial and technical schools, both manufacturers and the Government recognizing that unless means are provided to bring up an army of trained men an industrial peril far more serious than that existing will

be brought upon the country. France proposes to take the bull by the horns by establishing a very radical system of compulsory industrial education which would be injected into factory and workshop, employers being made responsible, under penalty, for the training of child employees. The *Engineer*, London, in a leading editorial on the French agitation, reveals the apprehension of England, and American manufacturers will recognize a pretty good exposition of affairs in this country in the words of the British writer, who says:

"In 1902 the Conseil Supérieur du Travail held an inquiry, and it was reported that apprenticeship in France was declining to an alarming extent, both as regards numbers and efficiency. Matters have improved but little since. There is no lack of young people in the factories, there are more than enough, but they are not apprentices, they are not taught the trade, but are engaged on work on which it is profitable to employ them, and they are paid wages in the ordinary sense of the word. The resemblance to the condition of affairs which prevails here (England) is obvious, and, indeed, under modern methods of manufacturing the condition is, unless by-laws and regulations intervene, inevitable. Keen competition and close cut prices, the automatic tool, the jig and the rig, the tool room, the routine card, the single operation method and the hundred branches of the organization of a well-ordered and profitable factory have made it possible for a great part of the work to be carried on by intelligence trained within the narrowest bounds, and since such labor is highly economical it is very largely employed. Moreover, the opposition to the system which might have come from parents and guardians of the lads has not only been removed but has been actually replaced by encouragement. Actuated by the desire—frequency from necessity—to see the children contributing to the support of the home, the parents, rather than bind them apprentices, have sought employment for them at remunerative wages. The result is unavoidable; the employers require lads to do routine work, the parents wish their boys to earn wages; the apprentice disappears and his place is taken by a youthful workman."

Now the Conseil Supérieur du Travail has prepared a long report which is the first step towards a new French law which will apply to both boys and girls, whether they are bound by indenture or not; and the discussion of which, it is believed, will result in a compulsory system of industrial education, along the lines laid down by the Conseil, or closely resembling them. This law, as proposed, will provide for the establishment of technical or trade classes, attendance at which, during eight hours per week, will be compulsory. The employer will be obliged not only to permit attendance at these classes within the legal 10 hours working day, but he will be expected to see that his young people are regular and proficient in their studies. At the end of each year there will be an examination in proficiency, and every boy or girl who can pass it will be exempt from any farther attendance at the classes. The youth who, after a year of careful application, fails to satisfy his teachers that he has the mental capacity for greater improvement is to be exempt from further attendance. Those who have received technical education at other schools will, of course, be exempt. In the examining body will be representatives of the employers. The education will be entirely free and the cost will be borne by the municipalities aided by State subscriptions.

A system such as this does not appeal to the American idea. The same evil exists in this country, but probably it will be remedied in some less radical manner and one which will not impose a compulsory burden upon the employer. The American manufacturer is becoming educated in the great question of providing capable labor for the future. He is taking great interest in industrial and technical schools. He is encouraging his employees to take advantage of the evening schools. He is even establishing evening schools at his own expense when no others are available. Sound business sense is combined with the philanthropic side of his interest. The present famine of skilled labor, at a time when there is no lack of unskilled material waiting for the chance to learn, has taught a lesson that will not be forgotten when the need has passed by. Usually in America the natural process of business evolution produces the panacea for any industrial evil, and the awakening of the manufacturer to a danger is an all-important element in the process.

CORRESPONDENCE.

Electric Power from Blast Furnace Gas.

To the Editor: Referring to a recent article in your journal by Mr. Frayn, entitled "Electric Power from Blast Furnace Gas," I wish to call your attention to the fact that in making his estimate of the cost of gas engine installation he has overlooked the fact that in order to have a sufficient amount of excess gas available for engines operating the generators it will be necessary to install gas blowing engines. These gas blowing engines with their equipment will cost very considerably more than an equivalent equipment of steam boilers and steam blowing engines and will have a higher rate of depreciation.

I have made a very careful study of this subject and suggest that in order to make a fair estimate of the cost it is necessary to include in estimates of the cost of by-product power the excess cost of gas blowing engine equipment over the steam equipment. Perhaps Mr. Frayn can be persuaded to revise his estimate, as suggested above, and also include a fair statement as to the probable revenue in Cleveland from the generating capacity of 10,000 horse-power. ARTHUR G. MCKEE.

CLEVELAND, OHIO, January 6, 1906.

Iron Trade Prosperity in Europe.

An indication of the prosperity of the European iron trade in 1905 is found in the statements of pig iron production for the first 11 months of the year, which in all the principal iron producing countries show an increase over the corresponding period of 1904: In Belgium the pig iron production in the 11 months ending with November, 1905, was 1,232,455 tons, as compared with 1,195,324 in the corresponding 11 months of 1904. In Germany, including Luxemburg, the November production was 998,000 tons. For the 11 months the production was 9,958,539 tons, as compared with 9,232,747 tons in the corresponding period of 1904, the increase being 725,792 tons.

Commenting on what it calls "The Iron Trade Boom," the London *Iron and Coal Trades Review* says that not only is there every indication of a considerable boom in Great Britain, but that the boom is to be of almost world-wide extent and to be long continued. It adds:

"It need not surprise us if this year the American production of pig iron reached 26,000,000 tons, and the American production of steel reached 17,000,000 tons. In other words, it does not strike one as improbable that the United States may in 1906 produce as much pig iron as the whole world produced in 1890, when that country for the first time took the leading place among the iron making countries, and as much steel as was similarly produced up to less than ten years ago. . . . So long as Great Britain retains the command of the sea she is likely to be in a better position than any other country to secure supplies of foreign ore, and it is not impossible that a great iron industry may be built up and main-

tained on foreign ores alone. Already nearly one-half of our total iron and steel output depends on such ores, and if one-half, why not the whole? Should this movement be extended, as is possible, blast furnaces and steel works are likely to be located more and more in the neighborhood of our ports. . . . In late years British ironmasters have done a great deal to secure the most modern equipment and the most up to date methods of working, and there is good reason to believe, as regards the principal works, alike for iron and for steel, that they are relatively of a higher standard, and better able to maintain successful competition against present day rivals, than those of a few years ago."

PERSONAL.

Edwin J. Watson, superintendent of the North Works of the Worcester Works of the American Steel & Wire Company, has been appointed an assistant to General Superintendent C. L. Miller, Pittsburgh. Mr. Miller already had two assistants, one with him at Pittsburgh, the other at Cleveland, but he has never before been personally represented in any of the Eastern plants. Mr. Watson will continue to live in Worcester, where he will make his headquarters, taking frequent trips to Pittsburgh. He is one of the oldest employees in length of service in the Worcester Works, having been with the American Steel & Wire Company and its predecessors for 43 years. He will be succeeded as superintendent of the North Works by Samuel Rogers, who has been superintendent of the steel plant at the South Works.

President E. C. Felton of the Pennsylvania Steel Company, Steelton, Pa., has issued a notice to the employees of that company stating that the offices of general manager, superintendent and assistant superintendent have been abolished and that the offices of metallurgical engineer, vice-president, general superintendent and assistant general superintendent have been created. H. H. Campbell has been appointed to the office of metallurgical engineer and will occupy a similar position with the Maryland Steel Company and the Spanish-American Iron Company. He will report to the president. J. V. W. Reynders has been elected vice-president and will have full charge of the company's affairs at Steelton, reporting to the president. John W. Dougherty has been appointed general superintendent of the Steelton works, reporting to the vice-president. Frank D. Carney has been appointed assistant general superintendent of the Steelton works, reporting to the vice-president. Thomas Earle has been appointed superintendent of the bridge and construction department and will report to the vice-president.

Herbert R. Hyatt, formerly with the Custodis Chimney Company, has been appointed district sales manager of the Weber Steel-Concrete Chimney Company, Chicago, with offices at 507 Singer Building, New York. Mr. Hyatt will have charge of the New England, New York and northern New Jersey territory.

Prof. Henry M. Howe, Columbia University, New York, has been elected a foreign member of the Swedish Royal Academy of Sciences. The other Americans holding this honor are Alexander Agassiz and Thomas A. Edison and Profs. Simon Newcomb, S. P. Langley and C. R. van Hise.

Louis M. Henoch, secretary of Joseph T. Ryerson & Son, Chicago, is taking a vacation in Florida.

J. O. Barnett, purchasing agent of the United Engineering & Foundry Company, Farmers' Bank Building, Pittsburgh, has been appointed manager of the chilled roll department of the company's plant at Vandergrift, Pa. He will make his headquarters in the Pittsburgh office and will have charge of the manufacture and sales of steel and brass castings. H. A. Grusch has succeeded Mr. Barnett as purchasing agent.

Edward Holth, chief engineer of the Dominion Iron & Steel Company, Sydney, has resigned. He expects to spend part of this year on a trip around the world. Mr. Holth has been with the Dominion Iron & Steel Company for almost five years and has successfully completed the company's plant, which is now in full operation in all its branches. His successor has not been appointed.

Andrew Telfer has tendered his resignation as superintendent of the Syracuse works branch of the National Tube Company. He will be succeeded by his son, Andrew Telfer, Jr., who has been identified with the company at Lorain, Ohio.

Edward King, president and treasurer of the Pennsylvania Engineering Works, New Castle, Pa., has been elected president of the National Bank of Lawrence County, succeeding William Patterson, his father-in-law, recently deceased. Mr. King is also vice-president of the Universal Standard Supply Company, New Castle.

R. H. West has resigned as superintendent of the Mesta Machine Company's foundry to become superintendent of the Vandergrift plant of the United Engineering & Foundry Company. Mr. West is a son of Thomas D. West.

J. G. Mustin, formerly in charge of the American Steel & Wire Company's mill at Braddock, Pa., has succeeded E. B. Douglass as superintendent of the Allentown wire mill of the same company.

W. G. Henderson, sales agent at Cleveland for the Lackawanna Steel Company, has resigned and will be succeeded February 1 by Major C. D. Rhodes, formerly general sales agent of the company.

George Heffner, Pittsburgh, has been made superintendent of the Genesee Furnace of Corrigan, McKinney & Co., which has recently been blown in at Charlotte, N. Y., after extensive repairs.

Henry Fisher has become superintendent of the Bass Foundry & Machine Company, Fort Wayne, Ind. He has been connected for the past two years with the Buffalo Foundry Company, Buffalo, N. Y., as foundry superintendent.

The name of D. Z. Norton, of the iron ore firm of Oglebay, Norton & Co., Cleveland, will be borne by a new boat recently ordered from the American Shipbuilding Company by W. C. Richardson of Cleveland.

M. C. Armour, Chicago, resident partner of Rogers, Brown & Co., sails next month for a Mediterranean cruise. He will also visit a number of cities on the Continent.

President W. G. Mather of the Cleveland Cliffs Iron Company and Vice-President J. C. Holt of the Superior Charcoal Iron Company, of which Mr. Mather is president, sail for Europe January 20. They will visit a number of carbonizing and iron and steel works.

Carl Dellwik, the well-known inventor of the water gas process bearing his name, is now in this country.

D. H. Williams, superintendent of the South Sharon Works of the American Sheet & Tin Plate Company, South Sharon, Pa., has resigned and David Phyle has been appointed to succeed him.

W. E. Corey, president of the United States Steel Corporation, has donated $10,000 to the Braddock General Hospital, at Braddock, Pa.

Edward Brush, secretary of the American Smelting & Refining Company, who has also been filling the post of vice-president and assistant to the president, has resigned the office of secretary and will devote himself entirely hereafter to the two offices he still holds. He has been succeeded as secretary by W. E. Merriss, who has been assistant secretary for four years. G. M. Borden was elected assistant secretary to succeed Mr. Merriss. Mr. Borden will become secretary of the American Smelters Securities Company and W. E. Merriss assistant.

John A. Topping has been elected president of the Republic Iron & Steel Company, succeeding S. G. Cooper, who resigns for the purpose of giving greater attention to the affairs of his firm, Banning, Cooper & Co., Ltd., Pittsburgh. E. W. Oglebay has been elected a member of the Executive Committee of the Republic Company.

J. A. Hatfield, president of the American Bridge Company, expects to sail for Europe toward the end of this month for the first recreation for many years.

Peter Donelson of the famous firm of iron and steel merchants, James Watson & Co. of Glasgow, is now in this country studying the situation.

The Steel Industry of Pittsburgh and Wheeling.*

BY HENRY P. BOPE, PITTSBURGH.

The subject I have chosen might be considered a hackneyed one were it not for its great interest to two communities so closely allied as Pittsburgh and Wheeling. Your aims are ours, your conditions are very much like those in Pittsburgh, what affects us affects you, your prosperity is ours, and when the depression comes you will suffer equally with us.

It has always been a strange thing to me how little interest men of business affairs take in what I may call "Americana." They seem to think the history of their own country is contained only in the immediate present, regardless of the mighty story of the past. In this country there is no part more interesting or more helpful for its experience than the growth and development of the great steel industry. It has been the experience of all nations that the first great development in commerce has been along the lines of agriculture. Our country has been no exception to this rule. Prior to the Civil War the great staple production in the country was cotton. Cotton was indeed king. Our manufacturing establishments had not been developed to any extent except those in New England, and the looms of Manchester and vicinity, in England, testified to the value of their trade in this commodity with the United States. It was this power, then, which gave to the Southern statesmen their influence and to a large extent continued their regency until the fatal day of secession. During the period of the war Northern manufacturing establishments were either created or enlarged by the demands of the national Government for munitions of war. At the close of the Civil War the Government ceased to be a purchaser and many of these establishments were turned into industrial lines—the beginning of the first great development of steel. And even then another great product of the soil, for a brief period, became monarch, because the great fertile plains of the West, thrown open to immigration, produced an article which had, and has, almost as many varied uses as steel. I refer to corn. During these years the steel industry was making solid progress; the great ironmasters were learning their lessons.

Steel Is King To-day.

In 1854 there were brought down from the Northwest but 3000 tons of ore. In 1902 this quantity had increased to 27,500,000 tons, and in 1905, the year just closed, the shipments from the Northwest approximated 34,000,000 tons. The amount to come down this year will only be regulated by the carrying capacity of the railroads from the lower lake ports. It is not my intention to weary you with many statistics, because this industry has grown to such proportions that the figures used are almost beyond comprehension.

The next step from iron ore is, of course, to pig. As far back as 1810 there were produced in the United States about 20,000 tons of pig iron. In 1902 this tonnage amounted to 18,000,000 tons, and in 1905 to 22,500,000 tons. New stacks will be in operation before the close of this year, and it may not be out of place to predict a tonnage well on to the 24,000,000 mark before 1906 closes.

Certain it is, however, that steel is unquestionably king to-day, and almost all other industries base their prosperity, or the reverse, upon the condition of the steel industry. When I tell you that among its varied uses about 5000 tons of steel alone are used annually in the manufacture of shoe eyelets and buckles, you will understand how varied this industry has become.

[Mr. Bope then cited a number of new uses for steel in substitution for wood with which his own company has been experimenting during the past year.]

The Future.

And now what shall we say of the future? Statistics we have been gathering indicate that the great plains between the Alleghenies and the Rockies will be the home of the greatest industries and the greatest consumption of steel during, probably, the next ten years. In this prosperity you are, of course, to share, your location being equal to that of Pittsburgh and your advantages quite as great.

With the opening of the Ohio River to Cairo, with a 9-foot boating stage, it is not a dream to expect to see fleets of steel barges, with steel tugs, ascending and descending the two great rivers, distributing the product of this great community of ours, one in purpose and interest, out through the Gulf to Central and South America, and beyond, through the Panama Canal, to the busy Orient. In making this statement I do not mean to disparage the great facilities of the railroads; but the increase in business will overtax the facilities and further advantages will be needed if we are to take care of this tremendous output which the future overshadows.

Federal Regulation of Corporations.

The first great proposition for us to consider, however, for the future is the probable course of Federal legislation with regard to corporations doing an interstate commerce business. States having been eliminated by the great use and unparalleled advantages of steam and electricity, this commerce has passed the boundary of the States and come into the domain of the nation. Commissioner Garfield in his recent report recognizes this fact and recommends that such corporations be put under either Federal license or Federal charter. It is the part of wise men not to oppose the inevitable, but to endeavor so to shape matters as to obtain the best results with the minimum amount of friction. Great corporations are a necessity to-day, and no one wishes to return to conditions antecedent to their organization. They have been beneficent largely in their results through the maintenance of a more stable condition of business, thereby insuring steadier employment for their workmen, whose interests have been recognized in many ways by the leaders of these corporations, many of whom have come from the ranks themselves. There is no wish on the part of the best of them to violate the law, but to live strictly within it. But I think you will agree with me that it is the business man who, from his long training and experience, fully understands commercial propositions, should seek to guide legislation, rather than theorists, however honest and well meaning. Business is so extraordinarily conservative, it takes so little to unsettle it, that it is safest in the hands of those who understand the delicacy of its operation.

Railroads and Manufacturers.

One great element that must also be considered is the railroads. They and their allied interests are, of course, the largest buyers in the country. Careful and far seeing managers of railroads recognize the value and importance of distributing their purchases over periods, rather than the forced buying at intervals, producing a congested condition of affairs which has the effect of stimulating industry to an abnormal extent and enhancing values to the point where reaction is inevitable. In other words, there is to-day recognized between the railroad and the manufacturer a mutuality of interest which tends toward conservatism in business affairs and the maintenance of stable conditions upon a plane of values which affords a fair margin of profit to the manufacturer and by no means cripples the railroad.

In conclusion, in all that is before us your State should certainly share to the fullest extent. Your fuel is at your door; your ores are as cheap as with us; your railroad rates are the same as those of Pittsburgh. I shall not enter upon any statement of the industries of Wheeling, which have made it such a remarkable city in the past and are bound to do more for it in the future, because the statistics which I have at hand are those prepared by yourselves and are, of course, familiar to you. But, in short, it may be said that a kindly and beneficent Providence has given you advantages more than you could have asked for yourselves, and with the energy displayed in the past, and with the aid of the long headed, clear sighted, far reaching men of affairs which your body possesses, there seems to be hardly any limit to that to which you may aspire and which, it seems to me, you are in a fair way to obtain.

* A paper read before the Board of Trade, Wheeling, W. Va., January 11. Mr. Bope is first vice-president of the Carnegie Steel Company.

The New York Automobile Shows

This year for the first time the Association of Licensed Automobile Manufacturers and the Automobile Club of America are holding their annual New York exhibitions separately, the former in Madison Square Garden and the latter in the Sixty-ninth Regiment Armory. The buildings are within a stone's throw of each other on Twenty-sixth street, so that it is easy for those who desire to do so to visit both shows in an evening. It is the sixth annual show for each organization and they opened concurrently at 8 p.m. Saturday, January 13. It would be difficult to compare the two, for the schemes of decoration are radically different. In the Armory the prevailing color is a dark green, with which red is used effectively. At the Garden nearly everything is in white and gold, while the ceiling is attractively covered with light blue studded with gold stars. In both places the exhibit arrangement is excellent. The cars, of course, are confined to the ground floors, while accessories and supplies occupy the galleries. To the casual observer there seem to be about the same number of exhibits at each show. A number of exhibitors are represented in both shows and cars of foreign make are to be seen at both. The crowds that thronged the shows on the opening night gave the individual little opportunity to gather much but the general effect, and if the exhibitors expected to accomplish much in demonstrating they were undoubtedly disappointed. Fortunately this will not hold true throughout the endurance of the exhibitions. During the day time there will be smaller crowds and the true value of the convenient arrangement of the exhibits will be more evident. Those who visit the shows to learn what progress has been made in the automobile industry will do well to take the less crowded times of the day, when they may expect to receive the attention of the exhibitors and discover what the improvements for 1906 are to be. Up to the time of going to press it has been impossible to obtain a satisfactory review of the new things and a fair résumé of what may be considered the predominating tendencies shown in the latest developments in motor car building. It is the intention to present such a review in the next issue.

Belgian Engineers on American Practice.

It is always interesting "how others see us." particularly so when the observers are experts of wide experience. Among those who participated in the recent visit of the Iron and Steel Institute were four Belgians, Jules Margery of Namur, formerly of the Rothe Erde Works; Fr. Timmermanns of the Société de la Meuse, Liége, Belgium; Maurice Magery of Rothe Erde, Aix-la-Chapelle, and Edouard Dreux of Mont. St. Martin. Jointly they have issued an illustrated pamphlet descriptive of the works which they have visited, with comments on American practice. These notes of travel practically cover the itinerary of the excursions made by the Iron and Steel Institute, including Bethlehem, Pencoyd, Maryland, Homestead, Duquesne, Jones & Laughlin, Edgar Thomson, Isabella, the Deering works of the International Harvester Company, Grand Crossing, South Chicago, Joliet, Lackawanna and Buffalo & Susquehanna. Many sketches of the general layout of plants, of individual trains and mills and of details accompany the text. It seems surprising that such a mass of data should have been accumulated on so hurried a trip.

The most noteworthy parts of the work, from the standpoint of the American engineer, are the analyses of the causes leading to the large outputs of blast furnaces, steel plants and rolling mills.

Writing upon the enormous value of American crops, W. G. Johnson, managing editor of the *American Agriculturist*, says: "All the gold mined in the world in the last 400 years could not purchase the farm crops of the last two years."

OBITUARY.

SALISBURY HYDE, for years secretary and treasurer of the Washburn Car Wheel Company, died in Hartford, Conn., January 11, aged 75 years.

MOSES H. WEBBER, for 30 years superintendent of the rope department of the Charlestown Navy Yard, died at Wellesley, Mass., January 10, aged 84 years. He became superintendent of the ropewalk in 1870 and retained the position until 1900. He designed the machinery of the naval display at the Centennial Exposition at Philadelphia and manufactured all the wire rope shown in connection with the exhibit.

WILLIAM P. ALLEN, of the William Allen Sons Company, boiler manufacturer, Worcester, Mass., died January 4, aged 54 years. He was the son of William Allen, founder of the business. He learned his trade in the shops of Jerome Wheelock, Worcester, inventor of the Wheelock engine, and later was employed by the New York Steam Engine Company, which occupied the site of the present Allen boiler works. When the corporation of William Allen Sons Company was organized William P. Allen was made treasurer and general manager and conducted the business until his health failed him, but continued his interest in the company until his death. He leaves a widow and three sons, the eldest, William G. Allen, being manager of the business.

The Coal Miners' Convention.

INDIANAPOLIS, IND., January 16, 1906.—The seventeenth annual convention of the United Mine Workers of America opened here to-day. There are 1200 delegates, representing over 400,000 miners, according to the organization's statistics. The convention will be followed January 25 by the usual joint conference with the operators of the central competitive district, comprising Illinois, Indiana, Ohio and western Pennsylvania. It is also expected that the conference between the operators and miners of the Southwest district, comprising Arkansas, Indian Territory, Kansas, Texas and adjoining fields, formerly held at Pittsburg, Kan., will be held in Indianapolis this year at the same time as the other conference.

Present indications are that the miners will ask for 10 to 15 per cent. increase of wages in the bituminous districts, and that a contract will not be signed with bituminous operators until there is an agreement in the anthracite districts. The miners appear hopeful of peace and believe their Wage Committee, appointed at Shamokin recently, will be received by the anthracite operators. At the joint conference two years ago the miners accepted a cut of 5.55 per cent. in wages on account of the operators' statement that trade was depressed. They expect to get that back and something additional, on the strength of the present industrial conditions of the country. There appears an optimistic feeling among the miners concerning the peaceful conduct and outcome of the coming conference, in striking contrast to the forebodings preceding the conference two years ago.

The Dominion Iron & Steel Company's works at Sydney, Nova Scotia, surpassed the estimate of output in every department in 1905. The blast furnaces produced nearly 21,000 gross tons of pig iron in December. The open hearth steel furnaces, which at the beginning of the year made about 10,000 tons of steel monthly, in December turned out over 20,000 tons, and the rolling mill, which previously had never touched 8000 tons, rolled 10,000 tons last month. The rod mill in December rolled 6764 tons of wire rods, without working on Sundays or on Christmas Day, the largest previous output for any single month having been 5200 tons. The following are some of the records made at the rod mill: For 24 hours, 305 tons, June 30; one week, 1672 tons, week ending December 23. During the year 47,917 tons of rods were rolled. In the first week of this year the rod mill made a new record, turning out 308 tons in 24 hours.

NEWS OF THE WORKS.

Iron and Steel.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, maker of wrought iron and steel sheets and black and galvanized pipe, has recently greatly enlarged its warehouse facilities and will hereafter carry a complete stock of its Star brand, genuine iron, strictly full weight pipe, both black and galvanized in all sizes from ⅛ inch to 12 inches inclusive; also 14 inches outside diameter. This pipe is fully guaranteed to be all iron, made from puddled pig iron, no steel whatever being used. The weights are guaranteed to average within 2½ per cent. over or under full standard card weights. This company also manufactures and carries in stock a full line of casing, tubing, drive pipe and line pipe up to 12 inches inclusive.

The Lukens Iron & Steel Company, Coatesville, Pa., is laying the foundations for the three new 50-ton open hearth furnaces which it is to install. With these new furnaces completed the company will have fifteen in all. Its mills are running to full capacity.

The Harrisburg Rolling Mill Company, Harrisburg, Pa., has about completed the changes to its plant which will enable it to handle orders for bar iron.

The Middletown, Pa., works of the National Tube Company has started another furnace in one of its large mills.

The Republic Iron & Steel Company has started up 26 ovens at its new plant in Redstone Township in the Connellsville region. This plant will eventually have 376 ovens.

Reports that the Crucible Steel Company of America, Pittsburgh, was negotiating for the purchase of the Colonial Steel Company, whose plant is at Colonia, Pa., have been officially denied.

The plant of the defunct Fort Wayne Iron & Steel Company at Fort Wayne, Ind., has been turned over to the Fort Wayne Rolling Mill Company and the receivers have been discharged. The new company will be under the management of Howell C. Rockhill. The new company assumes the debts of the old company, $250,000, and has five years in which to pay them.

Application has been made in Tennessee for a charter for the Chattanooga Iron & Coal Company, a manufacturing and mining corporation with $500,000 capital stock. The application was made by F. V. Berry, A. C. Conn, and H. Bond. It is stated that the new company has acquired large ore mining interests in North Georgia and timber and coal interests in the Sequatchie valley of Tennessee and will also acquire the new blast furnace now nearing completion on the Tennessee River near Chattanooga, of which concern C. E. Buek is president and Mr. Dowling superintendent. New York and St. Louis capitalists are interested and large capital is behind the enterprise. Parties now interested in the Blast Furnace Company, Chattanooga, and the Lacey-Buek Iron Company, Birmingham, will be interested in the organization.

Cherokee Furnace of the Alabama & Georgia Iron Company, located at Cedartown, Ga., and manufacturing charcoal iron, is again in blast after an idleness of more than a year.

The puddling department of the plant of the Shenango Iron & Steel Company, at Wheatland, Pa., was started January 16. As soon as a sufficient supply of muck bar has been secured the finishing mills will be operated. This company was recently organized in Pittsburgh to take over the business of the Continental Iron Company at Wheatland, and intends to make muck bar, iron bars, iron plates and skelp, the product of the mill being iron exclusively.

The Hudson Iron Company, operating Secaucus Furnace, Secaucus, N. J., is going to install at once three water tube boilers, 400 horse-power each; two hot blast stoves, one new hoist for raising material to top of stack, one new pig casting machine and other minor machinery, new tracks, &c.

No. 7 blast furnace of the Cambria Steel Company, Johnstown, Pa., was put in blast January 15. It is stated that the company will build three more blast furnaces at Franklin, near Johnstown, but this report is not officially confirmed.

The Dunbar Furnace Company, Dunbar, Pa., has been rebuilding its No. 2 blast furnace for some months and the new stack is expected to be ready for blast about March 1. It will be 18 x 80 feet and will have a daily output of about 300 tons. It will be equipped with a skip hoist and a new machine shop will be built, 40 x 80 feet.

General Machinery.

The Buffalo Forge Company is adding to its plant at Broadway and Mortimer streets, Buffalo, a new foundry building extending from Tousey to Spring streets, 116 x 202 feet, of brick and steel construction, with steel truss roof. This additional foundry space is required to care for the increasing business of both the Buffalo Forge Company and the George L. Squire Mfg. Company, manufacturer of plantation machinery, which the former company controls.

The Dacy Lumber Company, Woodstock, Ill., is in the market for a 12-inch planer and rip saw.

The Winston Mill Supply Company, Winston-Salem, N. C., has let a contract for the erection of an addition to its machine shop, 25 x 75 feet.

The Union Iron Works Company, San Francisco, Cal., has not yet completed plans for rebuilding its branch shop, which was recently burned. At the present time the company is doing the work of the branch shop at its main plant, which is located at Potrero.

The Galena Iron Works Company, Galena, Ill., has received an order for equipment from the Black Hawk Mining Company, Plattsville, Wis.

The Denver Engineering Works Company, Denver, Col., which sustained damage to its plant recently, is now in full operation and prepared to take care of orders.

Power Plant Equipment.

The Indiana Public Service Company, Aurora, Ind., has been incorporated with $200,000 capital stock, to build and operate an electric light and heating plant. The directors are David J. Hauss, Oliver M. Hubbard, Robt. W. Nelson and others.

Cannelton, Ind., will rebuild the electric light plant recently destroyed by fire. Address the Town Clerk.

The town board of Walkerton, Ind., has ordered plans for an electric light plant. Address the Town Clerk.

The Westinghouse Electric & Mfg. Company recently received orders from the New York Edison Company calling for six 3000 horse-power rotary transformers and a large amount of other apparatus.

Henry Holmes & Sons, operating the Sherman Carpet Mills, Philadelphia, Pa., have not yet determined on the entire equipment they will require for their new building, and at the present time contemplate installing a direct connection engine and generator of about 150 horse-power. They already have sufficient boiler capacity.

The Golden Key Mining Company, Hillside, Ariz., is installing a power plant to operate its mining machinery. Contract has been closed for two Hornsby-Akroyd oil engines of 16 horse-power each, built by the De La Vergne Machine Company, New York.

An important order recently secured by the Canadian Westinghouse Company was obtained from the Vancouver Power Company, Vancouver, B. C. This order included a 1500 horse-power 2200-volt revolving field engine type generator, which will be direct connected to a Pelton water wheel. This is a duplicate of the generators now in operation in the power plant of this company and will operate in multiple therewith. The order includes switchboards, transformers and a 1000-kw. 60-cycle rotary converter to operate 550 volts. This converter will furnish power for railroad work and will be controlled direct from the switchboard.

Green Fuel Economizer Company, Matteawan, N. Y., originator and builder of the fuel economizer, a device for recovering the waste heat in the flue gases from steam boiler plants, some time ago began the manufacture of fans, blowers and exhausters upon a large scale. The company had always been a large user of such apparatus. A few of the more prominent recent sales include two 310-inch induced draft fans, American District Steam Heating Company, Minneapolis, Minn.; 280-inch heating and ventilating fan and heater, Kimberly & Clark, Kimberly, Wis.; forced draft fan, Buckeye Engine Company, Providence, R. I.; planing mill exhauster, Whiton Machinery Company, Whitonville, Mass.; volume blower, Chandler Planer Company, Fitchburg, Mass.; two induced draft fans, Delamar Copper Company, Chrome, N. J.; heater coils, Saginaw Valley Traction Company, Saginaw, Mich.; economizer, induced draft fan and engine, Massachusetts Chemical Company, Walpole, Mass.; two sets of heater coils and ventilating fans, Atlas Wire Company, South Bartonville, Ill.; mine ventilating fan, Minonk Coal Company, Chicago, Ill.; ventilating fan, U. S. Navy Yard, Portsmouth, N. H.; heater coils, ventilating fan and economizer, Diana Paper Company, Harrisville, N. Y.; heating and ventilating apparatus for car barns, Fargo & Moorhead Street Railway Company, Fargo, N. D.; induced draft fan and economizer, Imperial Paper Company, Sturgeon Falls, Ont. Among recent economizer sales are the following: Western Electric Company, New York; Central Pennsylvania Traction Company, Harrisburg, Pa.; New Jersey Worsted Spinning Company, Garfield, N. J.; Muskegon Post Office, Muskegon, Mich.; State School of Mines, Denver, Col.; Frost Paper Company, Norwood, N. Y.; Knowlton Bros., Watertown, N. Y.; Union Station, Pennsylvania Railroad, Washington, D. C.; Jackson Street Railroad Light & Power Company, Jackson, Miss.; Gravesend Pumping Station, Brooklyn, N. Y.

The Westinghouse Machine Company, Pittsburgh, has received an order from the Baltimore & Ohio Railroad for a 1000 horse-power turbine, which will be placed on the ore docks at Lorain, Ohio, where it has established an electric lighting plant for the purpose of permitting the loading of ore day and night. The company is also building a 3000 horse-power turbine for the Laclede Gas & Electric Company, St. Louis, and a 1500 horse-power turbine for the South Park commission of Chicago.

Bridges and Buildings.

The McClintic-Marshall Construction Company, Pittsburgh, works at Rankin and Pottstown, Pa., has recently secured contracts for upward of 25,000 tons of structural steel. Among these contracts is bridge work for the Tidewater Railway, running from Norfolk, Va., to Deepwater, W. Va., amounting to about 12,000 tons; also about 5000 tons of structural steel to be

used in bins and trestles for the Bethlehem Steel Corporation, Bethlehem, Pa.; 6000 tons of elevated work for the Chicago & Western Indiana Railway, and 1500 tons for extensions to existing buildings and new foundry building for the Standard Steel Car Company, at Butler, Pa. The company also has a great many other smaller jobs and is running both its plants to full capacity, being filled up with work for several months ahead.

The Penn Bridge Company, Beaver Falls, Pa., has increased its capital from $50,000 to $500,000. A meeting of the company will be held this month for reorganization and the election of officers.

Foundries.

The New York Car Wheel Company expects within the next three months to complete its $750,000 contract for castings for one-half the quantity of tunnel rings to be used in the construction of the Pennsylvania Railroad Company's tunnel under the Hudson River from West Hoboken to the Thirty-fourth street station, New York. These castings are made in segments 6 feet long and 3 feet wide, being bolted together to form a ring 27 feet in diameter. The contract for the remaining one-half of the castings is being filled at the plant of the Wheeling Mold & Foundry Company, Wheeling, W. Va.

The National Steel Casting Company, Montpelier, Ind., has just completed a 20-ton steel flattening plate for the Marietta Glass Company, Indianapolis. This is one of the largest steel castings ever turned out by this company and is now on a planer in the works of the glass company, where it is being finished.

The Macphail Molding Machine Company, Davenport, Iowa, recently incorporated, is installing a plant for the manufacture of various types of foundry molding machines, including standard stripper plate construction and a new automatic rockover machine, squeezers operated both by air, belt and hand power, under patents applied for by James Macphail. W. W. Whithead is president and general manager, and H. H. Meyer secretary.

The foundry business heretofore operated under the name of the Minnie Harvester Company at St. Paul, Minn., will in future be conducted under the name of the Northern Malleable Iron Company.

Fires.

The Stony Brook Box Board Company's mills at Paynville, N. Y., were practically destroyed by fire January 10. The loss is placed at about $150,000.

The plant of the Shelby Stove Company, Shelby, Ohio, was burned last week. The loss is estimated to be about $15,000.

The plant of the National Hydraulic Stone Company, Baltimore, Md., was destroyed by fire January 11, with a loss of $25,000.

Fire in one of the large industrial buildings owned by the Factory Building Trust, South Boston, caused a loss of $75,000 January 9. The Railway Supply & Mfg. Company had an estimated loss of $40,000 and the Hallet & Davis Piano Company one of about $25,000, the latter mostly by water.

Fire in the handle shop of the Ames Shovel & Tool Company, North Easton, Mass., caused a loss of $40,000 January 11.

Hardware.

The Vandergrift Lock Mfg. Company has applied for a charter with a capital of $200,000 and has secured a 5-acre site in East Vandergrift, Pa., for a plant for the manufacture of locks. It is said the new company has secured an option on the Meyersdale Lock Mfg. Company's plant, at Meyersdale, Pa., and will move the works to East Vandergrift.

The Acme Handle Company, St. Louis, Mo., has just been incorporated with $15,000 capital stock. The company has purchased the plant of the Acme Handle Company at Bierne, Ark., the capacity of which will be largely increased. J. E. Duffield will be manager of the factory. The latest machinery for the manufacture of handles has been installed. The factory is situated in the center of one of the best hickory timber districts in the country, on the main line of the Iron Mountain Road. The company manufactures a full line of axe, sledge, pick, hammer and hatchet handles, both in the standard grades and in the second growth hand-shaved grade. Particular attention is being paid to the manufacturing of jobbers' special brands. A full line of both hickory and oak handles will also be made. The officers and directors of the company, who have been interested in the hardware jobbing business for many years and are thoroughly conversant with the needs of the jobbing trade in the handle line, are as follows: W. D. Biggers, president; James Milne, vice-president; John E. Pilcher, treasurer; J. E. Duffield, secretary and manager; James Wilson, W. W. Milne, J. N. Sutherland, L. G. Blackmer.

The New Haven Clock Company, New Haven, Conn., is pushing the work of repairing damages caused by the two recent fires as rapidly as possible. The estimated loss by the second fire, which damaged the clock movement department, was underestimated, being considerably in excess of $30,000, the original figure.

The Sliding Blade Shear Company, Chicago, has been incorporated to manufacture a slide cut shear, the blades of which in opening and closing slide endways of each other, making, it is stated, smooth, clean and easy cuts. The office of the company will be at 6126 Monroe avenue. The capital stock is $30,000, all of which has been subscribed. Perry McMillen, P. E. Thomas and B. F. Moore are the incorporators.

The United States Gutta Percha Paint Company, Providence, R. I., is to build a new plant on Dudley street, to be 50 x 150 feet and four stories. There will also be a boiler and engine house. Beyond the decision to install a Corliss engine nothing has been settled as to equipment.

The Irwin Auger Bit Company, Wilmington, Ohio, has about completed plans for the erection of a new factory building, which will be 150 x 160 feet, two stories high. Equipment will be transferred from the old plant.

A. W. Brown, proprietor of the Brown Iron & Brass Works, Ogden, Utah, will shortly open an iron fence factory and machine shop. His works on Twenty-first street will be abandoned for the larger and more advantageous site on Washington avenue. Ornamental iron work of all descriptions will be an added feature of the new shop.

The Capitol Lock-Nut & Washer Company, Columbus, Ohio, has purchased ground for a factory site on the Hocking Valley Railroad and contemplates putting in a nut and bolt factory. Machinery has been partially ordered from the Acme Machinery Company, Cleveland, Ohio. Power will be furnished by a 100 horse-power gas engine, which has been purchased. For some time the company operated from Chicago, having its product made under contract. Work will begin in the new factory with about 100 employees.

The Mann Tent Company, a Massachusetts corporation with authorized capital stock of $500,000, has been organized to manufacture a patent tent, the factory to be located at Waterbury, Conn. The officers are: President, Philip H. Coyle; vice-president and treasurer, Robert K. Slaughter; secretary, Charles W. Cushing, all of Boston, and general manager, Edgar E. Mann, Waterbury. The company will manufacture a patent tent, the invention of Mr. Mann. The tent is automatically self-closing and requires no ropes, poles, guys or pins.

The Michigan Pipe & Iron Company is a new industry incorporated at Richmond, Mich., with a capital stock of $50,000, to manufacture the Carter patent cast iron culvert pipe. Lou T. Stratton is interested in the enterprise.

The Western Steel & Iron Works, with main offices at Green Bay, Wis., has established a plant in DePere, Wis., being unable to secure a building in the former city. The company manufactures the Western post hole digger. The plant at DePere has a capacity of about 2000 diggers weekly, and this number will be increased in February. The company states that it is already 10,000 diggers behind on orders.

The Keefer-Heart Iron & Steel Company, Alexandria, Ind., has filed articles of incorporation to manufacture sheet steel vehicle wheels and other articles made of sheet steel. The company is a merger of the Heart Metal Wheel Company and the Keefer-Mould Company, and the business of the consolidation will be carried on in the Keefer plant. The incorporators are J. G. Brannum, Wm. D. Keefer, Joseph E. Jeffries, S. G. Phillips, Charles Hart, J. F. Merker, all of Alexandria, and John R. Welch, Columbus, Ohio.

The State of Indiana has begun the manufacture of binder twine at the State Prison, Michigan City. The success of the system will mean the abolition of the private convict labor system. The preliminary cost of plant and material is $25,000, of which $14,000 is appropriated for sisal.

The Vandergrift-Conger Wrench Company has been organized at Shelbyville, Ind., to build a factory for the manufacture of the Vandergrift wrench.

The Colonial Mfg. Company has been organized at Switz City, Ind., with $100,000 capital stock, to build a plant for the manufacture of a bicycle under new patents. The directors are John A. W. Miller, Daniel Spencer and W. Barton Spencer.

Business with the Trimont Mfg. Company, Roxbury, Mass., has been exceptionally good during the past year, necessitating day and night work, a condition which justified the purchase of additional property and the installation of much new and approved machinery. The company now has a total floor space of nearly 100,000 square feet, or three times the capacity of the plant one year ago.

For the past six months the Michigan Lumber Company, Aberdeen, Wash., has run a night as well as a day shift, the output being fully 110,000 feet daily. A number of improvements have lately been made in the plant, including a planing mill. When the planers are installed about 30 per cent. of the cut will be dressed. A dry kiln is now in course of erection, which will help the capacity 30,000 feet a day. This business was established in April, 1903, by G. W. Morley, of Morley Bros., Saginaw, Mich., and his son, W. K. Morley, who is secretary-treasurer and general manager of the company.

The Waterville Cutlery Company, Waterbury, Conn., has increased its capital stock from $15,000 to $80,000. Additional machinery has been installed in the shear department, which has heretofore been inadequate owing to increased business. It is not the plan to increase the size of the plant at present, but the company is prepared to do so when necessary.

The John F. Young Hoe & Tool Company has been incorporated at Evansville, Ind., with $25,000 capital stock, to manufacture hoes and edge tools. The directors are John F. Young, John Wyttenbach and Joseph H. Honningford.

The American Handle Company, Boston, Mass., has been incorporated in Massachusetts, with authorized capital stock of

$50,000. The officers are: President, C. Reynolds; treasurer and clerk, D. W. Howland; directors, these officers and A. J. Seaman, all of Boston. The company manufactures parcel handles, and for the present manufacturing will be done in Boston. The address of D. W. Howland, clerk, is Board of Trade Building, Boston.

The Ansonia Novelty Company, Ansonia, Conn., has increased its capital stock from $9,000 to $50,000.

The Ward Fence Company has been incorporated at Portland, Ind., with $30,000 capital stock. The directors are: Harry Ward, L. E. Ward and M. Earl Brackett.

Miscellaneous.

The Steele-Leffel Self-Operating Switch Company, Lincoln, Ill., has been incorporated with a capital stock of $10,000, to manufacture railway supplies. The incorporators are Lewis E. Steele, Priscilla Steele and P. H. Leffel.

The Shadbolt & Boyd Iron Company, Milwaukee, has recently erected and is now occupying a new steel and iron warehouse at 121-123 Sycamore street, directly in the rear of the main store on West Water street. The building is constructed of brick and is 50 x 200 feet. A driveway extends the entire length of the building, which facilitates the loading and unloading of stock.

The Hancock Mfg. Company has been incorporated at Chicago to manufacture a valveless lubricator. Fred. H., Harry W. and F. E. Hancock are interested. The company is located at 144 East Erie street.

The Illinois Corrugated Metal Company, Bloomington, Ill., has incorporated with a capital of $10,000, to manufacture corrugated and galvanized road and street culverts. The incorporators are Wm. M. Belt, Clifford D. Voris and Flora M. Voris.

The Acker Process Company, Niagara Falls, N. Y., will expand its plant by almost 100 per cent. during 1906. The company has just placed orders with the East Buffalo Iron Works, Buffalo, for $20,000 worth of new machinery, for three deliveries, in 30, 60 and 90 days. Contracts have also been made with the Niagara Falls Power Company for an additional supply of power. Several hundred additional men will be employed.

The Republic Belting & Supply Company has succeeded the Bodifield Belting Company, Cleveland, Ohio. The Bodifield Belting Company was formed about 20 years ago by C. T. Bodifield, the founder of the Akron Belting Company. Owing to ill health and other reasons he retired from the company in 1904. The present management has been in charge since that time. It has extensively increased the business, adding a full line of mill supplies and a complete line of mechanical rubber goods, aiming to carry everything in the line of power transmission and foundry supplies that is required. The equipment of the leather belt factory has been overhauled and new machinery added. The organization is the same as that built up by Mr. Bodifield. The business during the year 1905 has shown the most marked gain of any year in the history of the establishment, having attained an increase of nearly 75 per cent. over the preceding year. The confidence with which the public has accepted the new management has warranted it in changing the company's name to one broad enough to cover its line.

The Traders' Paper Board Company has given contracts for a new plant and equipment covering 2 acres, to be built at Bogata, N. J., adjacent to the Erie Railroad and the Hackensack River. The plant will have a capacity of 100 tons of board daily and the main building will be 212 x 510 feet, while 80 feet of it will be three stories in hight. The Curtin-Ruggles Company, 39 Cortland street, New York, has the contract for the building, which will be entirely of concrete. The power outfit will consist of Keeler horizontal return tubular boilers, four Hamilton Corliss engines aggregating 1250 horse-power and the Greene Fuel Economizer Company will furnish the economizers and an induced draft plant. The paper machines will be furnished by Bagley & Sewell of Watertown, N. Y., and they will be the largest machines of the kind ever built. Two large engines, stock chests and all shafting and transmission equipment will be furnished by the E. B. Jones Company, Pittsfield, Mass. Hugh R. Blotham, 21 Park Row, New York, will furnish the cranes. Augustus H. Ivines, formerly vice-president and general manager of the Traders' Paper Company, is president of the Traders' Paper Board Company and has offices at 39 Cortlandt street, New York.

Wallace A. Payne of Staunton, Va., and McChesney Goodall of Richmond have purchased the Leader Plow Company, at Bridgewater, Va., and will improve the plant. The main building is 36 x 95 feet.

A number of prominent business men of Detroit have decided to start a new copper and brass rolling mill and have arranged for the incorporation of the Michigan Copper & Brass Company, with a capital stock of $1,000,0000, of which one-half has already been taken. Among those interested in the enterprise are M. J. Murphy, George H. Barbour, J. E. Dannaher and W. D. Carpenter.

The Cadwallader Tin Plate & Metal Company, Pittsburgh, has given legal notice of its intention to change its name to the Pittsburgh Smelting & Refining Company.

Carl Weber, president of the Weber Steel Concrete Chimney Company, Chicago, who has just returned from Europe, has organized the Weber Steel Concrete Chimney Company, Limited, with offices at Queen Anne's Chambers, Westminster, London, Eng. The managing director of the European company will be John Cargill, who was formerly with the British Westinghouse Company and later London manager for Milliken Bros., Inc. Mr. Weber while in London closed a contract with Abram Lyle & Sons, London, England, for a 250 x 20 foot chimney.

Recent sales of the Morgan Construction Company, Worcester, Mass., include Pittsburg Reduction Company, four continuous gas producers for calcining aluminum ore in its rotary kilns in East St. Louis, Ill., to replace battery of old style hand feed type; Singer Mfg. Company., Elizabethport, N. J., automatic feeds for the equipment of all of its hand-fired gas producers. New York Lime Company has recently put in successful operation at Natural Bridge, N. Y., a 6 x 100 foot rotary kiln which is fired by a Morgan continuous gas producer with automatic feed.

The Sears & Nichols Company, Chillicothe, Ohio, has purchased the Bartlett packing house on Riverside street and is overhauling the building for the manufacture of can-making machinery and is adding some new machinery. The company makes the greater part of the cans used in its packing plants at Chillicothe and Amanda, Ohio, and Pentwater, Mich.

John F. Hottman, Dubuque, Iowa, is erecting a boiler and plate shop, 50 x 100 feet, with independent boiler and engine room. Pneumatic and other tools for its equipment have been purchased.

The Pike River Granite Company, Amberg, Wis., is building a new granite mill, which includes a main building, 40 x 100 feet; power house, 26 x 26 feet, and a blacksmith shop, 16 x 24 feet. Watson Bros., Marinette, Wis., are furnishing the pressed steel for a 30 x 120 foot tramway; Chicago Pneumatic Tool Company, an air compressor; Atlas Engine Works, boiler, and the G. A. Steigel Company, Reading, Pa., an overhead traveler.

The W. C. Hering-McGinty Company, Mansfield, Ohio, has been organized to manufacture a loose pulley oiler, the invention of J. H. McGinty, Sr. A factory building is now being erected, which will be operated at the start by a gas engine. Lathe equipment has been purchased from the Warner & Swasey Company, Cleveland, Ohio. The organizers of the company are J. H. McGinty, W. C. Hering and H. M. Artz.

A new corporation at Seattle, Washington, known as the Hydraulic Mfg. Company, has purchased a site 200 feet square at Rainier avenue and Eighth street and within a short time will let contracts for the construction of factory buildings, the first cost of which will be $100,000. The company was recently organized and took over the business and plant of the Pacific States Pipe Company, San Francisco, which will be moved to Seattle at once. The company will engage in the manufacture of supplies used in hydraulic mining and in addition will manufacture water and gas pipe, water tanks and all kinds of heavy steel material. Other lines will include a steel stove, particularly adapted to the fuels of Alaska, and a complete dipping outfit for the coating of water and gas pipe. The promoters of the Hydraulic Mfg. Company are as follows: F. S. Lange, president; R. H. Campbell, vice-president; Ira D. Campbell, secretary and consulting attorney; F. A. Hoffman, general manager; E. P. Glatz, constructing engineer.

The Lenoir Car Works, Lenoir City, Tenn., has recently received an order from the Southern Railway Company for 1,500 plain box cars of 60,000 pounds capacity each. This last order together with orders already in hand make a total of orders for 2017 new cars for the Southern Railway. The plant at Lenoir City at the present time is turning out ten 60,000 pound capacity box cars per day and plans are under consideration for the enlargement of the plant to the extent of increasing its output to 20 cars per day. Steel underframe cars will also perhaps be a feature that will be added in the near future. The plant employs when running full force 350 men.

The Newsom Archimedean Plowing Machine Company, St. Louis, Mo., which was recently organized, will lease a factory and expects by fall to have a capacity of 100 machines a day. The equipment will consist of thread milling machines, hydraulic presses, oil and annealing furnaces, 24-inch shapers, lathes, and other tools. Castings will be secured from outside foundries.

The Kilgore-Peteler Company, Minneapolis, Minn., has received contract approximating $250,000 for furnishing dump cars of 7-yard capacity at the mines of the Oliver Iron Mining Company at Hibbing and Virginia, Minn.

The New York Central Railroad has placed a contract with the General Railway Signal Company, Rochester, N. Y., for a system of interlocking and block signals, amounting to about $2,000,000.

The recently incorporated Chalfant Motor Car Company, Lenover, Pa., has taken over the old established machine business of J. N. Chalfant's Sons and will devote the plant to the building of light touring cars. M. F. Chalfant is president; Harry Chalfant, vice-president; H. S. Boyd, secretary; W. H. Chalfant, treasurer, and J. Edgar Zollinger, superintendent.

The Watt Engine Company, Port Huron, Mich., has been organized with a capital stock of $12,000 to manufacture small boats and launches, gasoline engines and similar lines. The incorporators are David Alles, L. W. Turnbull and Ellsworth Wilkinson.

The Iron and Metal Trades

Our Pittsburgh correspondent reports that the United States Steel Corporation has purchased from the Valley furnaces 85,000 tons of Bessemer Pig for delivery during the first quarter at $17.25 and also 40,000 tons for delivery during the second quarter at $17.75, Valley. Negotiations for about 50,000 tons additional for the second quarter are pending. When the latter purchase has been consummated practically all the surplus Bessemer and basic Pig Iron in the Valleys for the first half of this year will be out of the market.

The Cast Iron Pipe interests have been the heaviest buyers of Pig Iron lately. It is estimated that the consolidation has taken an aggregate of about 40,000 tons and the Massillon shop has bought 22,000 tons, the greater part from Southern furnaces.

The general foundry trade has bought largely, and yet particularly for the second quarter prices are not quite as high as have been demanded lately and as are being freely paid for the first quarter delivery.

There has been a feeling all along that difficulties in the transportation of raw material might during the winter cause a squeeze in Spot Iron, and while the season thus far has been exceedingly favorable all danger is not yet removed.

There have been numerous reports of large transactions for American account in the English markets. None of these can be confirmed on this side, and in view of relative prices seem impossible. The only exception, in which there may be an opportunity for importing Pig Iron, is in the case of Low Phosphorus Iron, in which prices abroad and here are nearer and in which there is a shortage here.

Rail makers have taken quite some additional tonnage. Among the larger orders are 20,000 tons for the Pennsylvania Railroad, which carries the total requirements of the system to close to 200,000 tons, and 10,000 tons additional for the Gould lines.

The Structural shops are booking a good deal of work. A fair percentage of the capacity of the shops of the Steel Corporation will be needed for the extensions and betterments of its own plants. Thus 8000 tons alone will be required for Homestead, and about 7000 tons for South Chicago. Bethlehem has placed an order for 5000 tons in Pittsburgh, and the same shop, the McClintic-Marshall, has been awarded 1500 tons for the Standard Steel Car Company, 6000 tons for tract elevation in Chicago, and 12,000 tons of the Tidewater work, the balance, 5000 tons, going to another plant. Among other contracts are 3800 tons for the Franklin & Clearfield road, 3100 tons for M. K. & T. line and 1400 tons for the Lake Shore road.

The material for another lake vessel has been placed in Chicago, and there has been some noteworthy covering by boiler manufacturers of requirements for the first half of the year.

The open winter thus far has greatly encouraged work which calls for Wire products, and the new orders and shipments continue at a rate extraordinary for this season of the year. The mills thus far have been quite unable to accumulate the stock for the spring trade which they usually endeavor to do. To what extent this is counterbalanced by a disposition on the part of the trade to anticipate requirements it is difficult to gauge at the present time.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Jan.17, 1906.	Jan.10, 1906.	Dec.20, 1905.	Jan.18, 1905.
PIG IRON:				
Foundry No. 2 Standard, Philadelphia	**$18.50**	$18.50	$18.25	$17.50
Foundry No. 2 Southern, Cincinnati	16.75	16.75	16.75	16.25
Foundry No. 2 Local, Chicago	19.25	19.25	19.25	17.50
Bessemer, Pittsburgh	18.35	18.35	18.35	16.85
Gray Forge, Pittsburgh	**17.25**	17.25	17.10	16.25
Lake Superior Charcoal, Chicago	**20.50**	20.50	20.00	18.50
BILLETS, RAILS, &c.:				
Bessemer Billets, Pittsburgh	26.00	26.00	26.00	23.00
Forging Billets, Pittsburgh	30.00	30.00	30.00	25.00
Open Hearth Billets, Phila	*29.50*	30.00	30.00	25.50
Wire Rods, Pittsburgh	**34.00**	3400	32.50	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	16.50	16.50	16.50	16.00
O. Steel Rails, Philadelphia	18.25	18.25	18.25	17.75
O. Iron Rails, Chicago	23.00	23.00	23.00	21.00
O. Iron Rails, Philadelphia	24.50	24.50	24.50	22.50
O. Car Wheels, Chicago	19.00	19.00	19.00	16.50
O. Car Wheels, Philadelphia	18.75	18.75	18.75	16.00
Heavy Steel Scrap, Pittsburgh	*17.00*	17.50	17.50	16.00
Heavy Steel Scrap, Chicago	15.00	15.00	15.00	15.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.83½	1.83½	1.83½	1.70
Common Iron Bars, Chicago	*1.80*	1.85	1.85	1.65
Common Iron Bars, Pittsburgh	1.90	1.90	1.90	1.69¾
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.54½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.40
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.64½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.50
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.64½
Beams, Pittsburgh	1.70	1.70	1.70	1.50
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.64½
Angles, Pittsburgh	1.70	1.70	1.70	1.50
Skelp, Grooved Steel, Pittsburgh	**1.57½**	1.55	1.55	1.55
Skelp, Sheared Steel, Pittsburgh	*1.60*	1.65	1.65	1.60
SHEETS, NAILS AND WIRE:				
Sheets, No. 27, Pittsburgh	**2.30**	2.30	2.20	2.20
Wire Nails, Pittsburgh	**1.85**	1.85	1.80	1.75
Cut Nails, Pittsburgh	**1.75**	1.75	1.70	1.75
Barb Wire, Galv., Pittsburgh	**2.30**	2.30	2.25	2.20
METALS:				
Copper, New York	*18.75*	19.00	19.00	15.25
Spelter, St. Louis	*6.45*	6.45	6.50	6.10
Lead, New York	*5.80*	5.95	6.00	4.60
Lead, St. Louis	**5.85**	6.00	5.80	4.52½
Tin, New York	**36.40**	36.50	36.37½	29.25
Antimony, Hallett, New York	**14.25**	14.25	13.00	8.50
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	**3.69**	3.69	3.59	3.74

Chicago.

FISHER BUILDING, January 17, 1906.—(*By Telegraph.*)

There is no abatement in the demand for Plates, Shapes and Steel Bars. Notwithstanding the season, the bookings of Western finishing mills since the first of the year easily aggregate 40,000 tons. The congestion at the mills is being increased from day to day and promises of deliveries six months hence do not deter consumers from placing contracts. The Plate tonnage placed in the past few weeks aggregates 10,000 tons, made up mainly of small orders from boiler makers, but it includes 1000 tons placed this week for another lake boat. The announcement of the decision to erect another Plate mill at South Chicago is welcome news to consumers and promises relief from a sadly congested condition which has existed for nearly two years. Contracts are now being booked by the Illinois Steel Company against the output of its new Structural mill and orders taken already total 8000 tons. The steel for the new plants at the South Works will be fabricated at the company's North Side plant and will require about 7000 tons. On account of the lower prices prevailing for Scrap, Iron Bars are easier, and while 1.82½c. is the lowest price named this week, 1.80c. could readily be done on a desirable order. Light Rail bookings continue heavy and thus far this month have exceeded the output of the Western mills. No orders for standard section Rails have been taken on during the week and through the transfer of 100,000 tons to Carnegie mills some capacity is now available at the local mill for delivery the last quarter. Municipal lettings of Cast Iron Pipe contracts in the West and Northwest are being made earlier than in former years, the cities of Minneapolis and St. Paul having closed for 2500 tons, while the city of St.

Louis will close for 6500 tons this week. Store prices on Sheets have only been advanced $1, as compared with a mill advance of $2. Spot Coke continues to rule low, owing to the heavy consignments from the Connellsville field. Twenty-five cars of foundry Coke were sold this week to avoid demurrage charges at $5.65, Chicago.

Pig Iron.—Western consumers are showing more interest in the market than they have for some months, and sales of Northern Foundry in 1000 and 2000 ton lots at current prices for delivery the last half were reported this week. Scattering sales of small lots of both Northern and Southern Iron for second quarter delivery have been numerous and aggregate 10,000 tons. Southern Iron deliveries continue to be delayed on account of the car shortage and large stocks are being accumulated at nearly all the Southern furnaces. One large Southern Foundry Iron interest that has been out of the market for several months has again opened its books for first half delivery. Taken on the whole, the Southern situation is not as strong as it was a month ago. While $14.50 is not openly shaded, there is little doubt that a concession of 25c. would be secured on a round tonnage. The Northern situation shows no loss of strength, and the purchase of great quantities of Bessemer Pig Iron by the United States Steel Corporation from Valley furnaces for first quarter delivery precludes the possibility of competition from this source with local stacks well through the spring months. We quote at Chicago as follows:

Lake Superior Charcoal	$20.50 to $21.50
Northern Coke Foundry, No. 1	19.75 to 20.00
Northern Coke Foundry, No. 2	19.25 to 19.50
Northern Coke Foundry, No. 3	18.75 to 19.00
Northern Scotch, No. 1	20.00 to 20.50
Ohio Strong Softeners, No. 1	20.05 to 20.30
Ohio Strong Softeners, No. 2	19.55 to 19.80
Southern Coke, No. 1	18.65
Southern Coke, No. 2	18.15
Southern Coke, No. 3	17.65
Southern Coke, No. 4	17.15
Southern Coke, No. 1 Soft	18.65
Southern Coke, No. 2 Soft	18.15
Southern Gray Forge and Mottled	16.65
Malleable Bessemer	19.25 to 19.50
Standard Bessemer	19.55 to 19.80
Jackson Co. and Kentucky Silvery, 6 %	21.30
Jackson Co. and Kentucky Silvery, 8 %	22.30
Jackson Co. and Kentucky Silvery, 10 %	24.30

Metals.—Lower prices are now prevailing on Copper, but as yet have been no incentive to consumers to cover requirements. Pig Tin, Lead and Spelter remain practically unchanged, and the trading is almost entirely limited to small lots for immediate requirements. We quote: Casting Copper, 19½c. to 20c.; Lake, 20c. to 20½c.; Pig Tin, car lots, 38c. to 38½c.; small lots, 39c. to 40c.; Spelter, prompt delivery, 6¾c. to 7c. for car lots; Lead, Desilverized, 6.35c. to 6.50c.; Corroding, 6.80c. to 7c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is $8 list, f.o.b. Lasalle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 16¼c.; Heavy Copper, 16¼c.; Copper Bottoms, 15¼c.; Copper Clips, 16¼c.; Red Brass, 15¼c.; Red Brass Borings, 13¼c.; Yellow Brass, Heavy, 11¾c.; Yellow Brass Borings, 10¼c.; Light Brass, 8½c.; Lead Pipe, 5¼c.; Tea Lead, 4¾c.; Zinc, 5c.; Pewter, No. 1, 24c.; Tin Foil, 29c.; Block Tin Pipe, 27½c.

(By Mail.)

Rods and Billets.—Rolling Billets are no longer offered in this market and Forging Billets are only obtainable in small lots at $35 a ton, without the usual extras. Wire Rods are firm and are quoted at $36 f.o.b. Chicago for Bessemer and $37 for basic.

Rails and Track Supplies.—While no large contracts for Standard Section Rails were taken during the week the light rail tonnage continues exceedingly heavy, more than 3000 tons having already been booked this month. Deliveries cannot be made in less than three months and in a few instances premiums have been paid to secure prompt shipments. The recent advance in Spikes has not affected new tonnage, which was on a par with December's average the past week. A new Light Rail mill has been decided on for the South Works and a new mill to roll Standard Sections will be erected at Buffington. The Light Rail mill is to be a duplicate of Mill No. 3 of the Edgar Thomson Works of the Carnegie Steel Company. We quote as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.10c.; Track Bolts, 2.55c. to 2.60c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $27 to $28; 25 lb., $28 to $29; 20 lb., $29 to $30; 16 lb., $30 to $31; 12 lb., $31 to $32, and lighter sections down to 8 lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Plates.—Plate requirements for another lake vessel were placed with the Illinois Steel Company this week, aggregating 1000 tons. Boiler makers throughout the West have been placing contracts to cover six months' requirements since the first of the year and the total already placed aggregates nearly 10,000 tons. The Plate capacity of the Illinois Steel Company is practically taken up through the first half of the year and the new Plate mill to be erected at the South Works will greatly relieve the congested condition which has existed there for several years. Quotations are unchanged as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange and head quality, 25c. extra.

Structural Materials.—The contract for the erection of the new County Building will not be awarded until February 5, and no separate bids will be accepted for the steel work, as that will be included in the general contract. The structural material for another lake vessel aggregating 500 tons was placed this week. Contracts for material are now being closed against the output of the new mill of the Illinois Steel Company and already aggregate 8,000 tons this month. The new mill buildings at the South Chicago works will be erected by that company's fitting department, operated in conjunction with the North Works. The new work already contemplated will easily require 7,000 tons of material. Local jobbers continue in receipt of large contracts for material for immediate delivery at prices ranging from 2.25c. to 2.75c. Quotations on future shipments from mill as are follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼ inch and heavier, 1.86½c.; Angles, larger than 6 inches on one or both legs, 1.96½c.; Beams larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Bars.—Iron Bars are weaker and sales have been made during the week at 1.82½c., and as low as 1.80c. has been quoted. The Republic Iron & Steel Company has withdrawn its quotation of 2c., which has been successfully maintained on prompt business for several months. Considerable new busness is reaching the mills in Steel Bars, and specifications are of such volume that the mills are unable to catch up on deliveries. Quotations are revised as follows: Iron Bars 1.80c. to 1.85c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.01½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras, and Hard Steel Angles and Bars are now quoted on practically the same bases as Soft Steel. Store prices are as follows: Bar Iron, 2.20c. to 2.25c.; Soft Steel Rounds and Squares, 2 inches and larger, 2c., base; Flats, 2 and 4 inches by 1⅛ inch and thicker, 2c., base; Flats, 4½ x 5 inches and 6 x 5-16 inch and thicker, 2c.; all Ovals, Half Ovals and Half Rounds, 2c.; Steel Bands are held at a minimum of 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.20c. to 2.25c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Sheets.—Inasmuch as large distributors and consumers covered their future requirements running well through the first half of this year early in the fall at prices ranging from 2.10c. to 2.20c., the advance put into effect last week will result in very little high price business coming to the mills. Large jobbers and distributors in this district, notwithstanding the advance of $2, have marked up their quotations only $1 a ton, effective Monday, January 15. We quote in car lots from mill: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Nos. 16 and 17, 2.06½c. to 2.11½c.; Box Annealed, Nos. 18 to 20, 2.26½c. to 2.31½c.; No. 27, 2.46½c. to 2.51½c.; No. 28, 2.56½c. to 2.61½c.; Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 17 to 21, 2.86½c.; Nos. 22 to 24, 3.01½c.; Nos. 25 and 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c.; No. 30, 4.11½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.50c. to 2.60c.; Nos. 22 to 24, 2.60c. to 2.70c.; No. 26, 2.65c. to 2.75c.; No. 27, 2.70c. to 2.80c.; No. 28, 2.80c. to 2.90c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.35c. to 3.45c.; No. 27, 3.55c. to 3.65c.; No. 28, 3.75c. to 3.85c.; No. 30, 4.85c. to 5.05c.

Merchant Pipe.—The demand has improved materially since the first of the year, and some round tonnages have been placed by both distributors and large consumers. Prices are firmly maintained, notwithstanding the reports to the contrary. The following official discounts represent the market's minimum: Black Steel Pipe, 78.35 per cent. on the base sizes ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—Some shading has been reported on Boiler Tubes, although in the extreme cases it does not amount to more than $2 a ton. The leading inter-

ests, however, are maintaining discounts and a fair tonnage is being booked. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2¾-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—The contracts for the municipal requirements of the cities of Minneapolis and St. Paul, aggregating 2500 tons, were placed with James B. Clow & Sons and J. K. Dimmick & Co. Bids for the requirements of the city of St. Louis, amounting to 6500 tons, will be closed on Friday, January 19. Quotations are unchanged, as follows: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Merchant Steel.—There is practically no change in the situation, specifications continuing exceedingly heavy, while the new business is comparatively light. Prices, however, continue well maintained, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛ inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, $1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Coke.—There is an abundance of Connellsville Foundry Coke in this market for prompt delivery at prices ranging from $3 to $3.25 at the ovens, equivalent to $5.65 to $5.90, Chicago. These continued heavy consignments to some extent have interfered with the closing of contracts extending over the first half of the year, producers not desiring to close at less than $6.15, Chicago. Contracts for by-product Coke are being closed on this basis and one independent blast furnace interest, unable to secure Coke from its Wise County ovens, is temporarily using this Coke. Since the new Chicago plant was placed in operation the production in this district, including Milwaukee, is about 40,000 tons a month.

Old Material.—Lower prices are noted on Railroad Wrought, Cast Scrap and Country Material. The railroad offerings in the past week have been comparatively light and the prices obtained have been lower than those ruling for some time. Consumers generally have large stocks on hand, having covered their requirements several months ago in anticipation of severe weather and delayed railroad shipments. The stocks in the hands of dealers are heavier than they have been for nearly a year and their offerings are generally at lower prices to move the material. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$23.00 to $23.50
Old Steel Rails, 4 feet and over	16.50 to 17.00
Old Steel Rails, less than 4 feet	16.50 to 17.00
Heavy Relaying Rails, subject to inspection	26.50 to 27.00
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	15.00 to 15.25
Frogs, Switches and Guards	15.00 to 15.50
Mixed Steel	13.00 to 13.25

The following quotations are per net ton:

Iron Fish Plates	$19.00 to $19.50
Iron Car Axles	23.50 to 24.00
Steel Car Axles	19.50 to 20.00
No. 1 Railroad Wrought	17.00 to 17.50
No. 2 Railroad Wrought	17.00 to 17.50
Locomotive Tires, smooth	14.25 to 14.50
Railway Springs	15.00 to 15.50
No. 1 Dealers' Forge	13.00 to 13.50
Wrought Pipes and Flues	12.00 to 12.50
Mixed Busheling	12.00 to 12.50
Iron Axle Turnings	12.00 to 12.50
Soft Steel Axle Turnings	12.00 to 12.50
Machine Shop Turnings	12.00 to 12.50
Cast Borings	10.00 to 10.50
Mixed Borings, &c	9.75 to 10.00
No. 1 Mill	9.00 to 9.50
Country Sheet	8.75 to 9.00
No. 1 Boilers, cut to Sheets and Rings	12.00 to 12.50
No. 1 Cast Scrap	14.50 to 15.00
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	15.00 to 15.25
Agricultural Malleable	14.00 to 14.50

Work has practically been completed on the steel span of the Blackwell's Island section of the new bridge over the East River, bringing it to the pier on the east shore of the island. It is expected that work will be started this month on the removal of buildings for the approach at the Manhattan end of the bridge.

Philadelphia.

REAL ESTATE TRUST BUILDING, January 16, 1906.

The demand is quite as large as manufacturers are able to deal with, so that a further increase might prove to be an embarrassment. There is a general desire to keep Pig Iron prices within moderate limits, and while to-day's rates are none too remunerative, owing to the higher costs of production, yet every half dollar advance brings us nearer to the importing point, which would be regarded as the beginning of the end. With a productive capacity which competent authorities estimate may be placed at close to 2,500,000 tons per month it ought not to be necessary to import Iron, especially as it is understood that an additional reserve capacity will be available during the early spring months. Nevertheless, there is some anxiety in regard to supplies during the next few weeks. The furnace output was somewhat disappointing during December, and as consumers are pressing for prompt shipment of their January and February purchases the situation is at least somewhat exciting. Much will depend upon the weather, and as there has been no interruption thus far there is room for a reasonable hope that the January output will be sufficient to more than offset the December shortage. In this respect, however, the trade is working on a close margin, and while the ultimate outcome will no doubt be satisfactory it should cause no surprise to find that both buyers and sellers are a little on the tenter hooks and likely to remain so until the situation is more fully developed. The enormous demand for Pig Iron is convincing evidence of the substantial character of business and that all lines are participating in the movement as they have never done until now. The entire situation seems to resolve itself into whether the demand can be met without further advances in prices. The impression in the trade seems to be that, with reasonably good weather, deliveries can be made in sufficient volume to meet all requirements, but in the event of snow blockades or other unforeseen interruptions it might cause a good deal of trouble, although with a little patience it is believed that prices can be kept at about to-day's figures.

Pig Iron.—There is no falling off in the demand. The lots called for are not as large as they were earlier in the month, but it is astonishing how many buyers there are and how much Iron is wanted. Big buyers come in for their 5000, 10,000 and 20,000 ton lots and for the time being dominate the entire market, but when they step down and out, day to day, buyers step in and take their 100 or 300 or 500 ton lots, thereby causing an unending stream of business and holding prices as firm as a rock. It cannot be said that prices are quotably higher, but the undertone is one of great strength and the average of all sales would be higher than any time within the past two years. This is not the result of speculative buying, nor of manipulation, but is the result of legitimate conditions, the importance of which is probably not fully realized. The fact that production increased 5,000,000 tons within the past two years and that prices have advanced an average of $2 per ton during that period is astounding. A large increase in production is usually followed by a decline in prices, but here we are with a 5,000,000-ton increase in two years, with a reasonable certainty that a still further increase of 5,000,000 tons will be made during 1906, and yet there is a feeling of anxiety lest there may not be enough Pig Iron to go around. The more this phase of the situation is considered the more impressive it becomes, although ultimately there can be no doubt that a reaction will be met with. It is not in sight yet, however, and unless something unforeseen occurs it need hardly be considered until toward midsummer. By that time the 1906 crop situation will be of importance and will undoubtedly be an influential factor in determining the character of business during the later portion of this year and the year following. Reductions will come as they have come in the past, but business methods have so changed that it is hardly likely that there will be such revulsions as in 1873 to 1878 and again in 1893 to 1898. The country is wealthier and is stronger in every way, so that while the tide of prosperity is now very high it is a reasonable assumption that business will never sink to such profound depression as during the periods named. This feeling permeates the trade in a very marked degree and is in itself a very hopeful feature. As regards sales during the past week, it may be said that no particular interest has been conspicuous beyond others. All grades have been well taken and as a rule at prices within the limits named below, covering deliveries in Philadelphia and adjoining districts:

No. 1 X Foundry	$19.00 to $19.50
No. 2 X Foundry	18.50 to 18.75
No. 2 Plain	17.75 to 18.25
No. 2 Southern	18.75 to 19.00
Standard Gray Forge	17.00 to 17.50
Basic	17.90 to 18.10
Low Phosphorus	24.50 to 25.50
Bessemer	19.50 to 19.75
Malleable Iron	19.00 to 19.25

Steelmaking Alloys.—There is a little easing up on futures, but spot lots are hardly quotable except as a guess. The outside quotations given below are for February or

March deliveries. The inside for deliveries during the last six months of the year:

Silico Spiegel 10 and 18 per cent	$44.00 to $55.00
Ferrosilicon, 50 per cent	100.00 to 110.00
Spiegeleisen, 20 per cent	42.00 to 46.00
Ferromanganese, 80 per cent	85.00 to 125.00

Steel.—The market is active, but prices are a little unsettled, owing to the fact that some Steel bought for January specifications is to be resold, and is offered at a marked concession. The regular price, however, is $29.50 to $30 for ordinary Open Hearth Steel, and $35 to $40 for special qualities.

Plates.—The demand for Plates is very heavy, and mills are gaining on their deliveries very materially. In some instances a tenth advance is asked, but general quotations are unchanged as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Still Bottom Steel	2.03½	2.08½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100
3-16-inch thick	$0.10 pounds extra.
Nos. 7 and 8, B. W. G.	.15 "
No. 9, B. W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "

Structural Material.—It is hardly worth making any comment under this heading, as there is no change, nor is there likely to be any for an indefinite period. New mills keep starting up or old mills increase their capacity, but there is still a shortage of material, which is almost as great as it ever was. Prices unchanged, as follows: Beams, Channels and Angles, 1.83½c. to 2c., delivered.

Bars.—The Bar situation is a little peculiar, having the appearance of being weak in some respects and very strong in others. The facts are that two or three of the smaller mills are naming a half-tenth to a tenth below the 1.83½c. rate which all the larger mills get, but they make only a few sizes, and their Iron is not very well known and for the present can only be sold by cutting under the regular price. It really cuts very little figure on the market, but it gives buyers a chance to say they "can buy lower," which, while true, does not affect the price of first-class refined Iron. Steel Bars are quoted at 1.63½c., but deliveries are not guaranteed in any reasonable time at the price named.

Sheets.—The demand is good at prices last quoted—viz.: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The market is in a very unsatisfactory condition. It cannot be said that prices are lower, but it is hard to make sales unless at reduced prices, to which holders are not willing to accede. The open weather has been favorable to the buying interests, and as their yards are full of stock they can for the present afford to dictate their own terms. Holders say they will have their turn later, which, of course, time will show. Meanwhile large lots of No. 1 Steel have been sold at $17.50, delivered, also a considerable tonnage of Low Phosphorus Scrap at $24. Bids and offers, however, for deliveries in buyers' yards would be about as follows:

Scrap Steel Rails	$18.25 to $18.50
No. 1 Steel Scrap	17.50 to 18.00
Low Phosphorus Scrap	24.00 to 24.50
Old Steel Axles	21.00 to 22.00
Old Iron Axles	27.50 to 28.00
Old Iron Rails	24.50 to 25.00
Old Car Wheels	18.75 to 19.00
Choice Scrap, R. R. No. 1 Wrought	21.00 to 22.00
No. 1 Yard Scrap	19.00 to 20.00
Long and Short	18.00 to 19.00
Machinery Scrap	16.00 to 16.50
Wrought Iron Pipe	16.00 to 16.50
No. 1 Forge Fire Scrap	16.00 to 16.50
No. 2 Light Ordinary	12.50 to 13.00
Wrought Turnings	14.50 to 15.00
Axle Turnings, Choice Heavy	15.50 to 16.00
Cast Borings	11.00 to 11.25
Stove Plates	13.25 to 13.75
Grate Bars	12.75 to 13.25

The annual dinner of the Pittsburgh Gage & Supply Company to its office men and salesmen was given last week at the Hotel Henry, Pittsburgh. Covers were laid for 56 persons. Among those present were officers of the company, all of whom spoke in commendatory terms of the work done by the employees since the last annual gathering. J. B. Watson presided as toastmaster, and among those who responded to toasts were: W. L. Rodgers, president; G. W. Malone, manager; G. D. McIlvaine, sales manager; J. Lee Rodgers, secretary; H. W. Burnson, assistant secretary, and R. F. Ramsey, treasurer.

Pittsburgh.

PARK BUILDING, January 17, 1906.—(*By Telegraph.*)

Pig Iron.—The total purchases of Bessemer Pig Iron by the Steel Corporation amount to 85,000 tons for first quarter at $17.25, Valley furnace, divided between W. P. Snyder & Co. and the Bessemer Pig Iron Association, and 30,000 tons for second quarter at $17.75, Valley furnace, taken by W. P. Snyder & Co. Negotiations are now on between the Corporation and the Bessemer Pig Iron Association by which the former will likely buy about 50,000 tons for second quarter at $17.75, Valley furnace. We also note a sale of 500 tons of Bessemer Iron for January and February delivery at $17.50, Valley furnace. Quite a heavy demand is reported for Malleable Bessemer Iron, on which the furnaces are quoting $17.25 to $17.50, Valley furnace. Basic Iron is slightly lower in price than Standard Bessemer, and is held at about $17.25, Valley furnace. There is only a fair inquiry for Foundry Iron, on which prices do not seem to be quite as firm as on Bessemer and Gray Forge. We quote Northern No. 2 Foundry at $17.25, Valley furnace, but it is probable that some sellers would shade this price about 25c. a ton. The total purchases of the United States Cast Iron Pipe & Foundry Company were between 40,000 and 50,000 tons, mostly Southern Iron. The Massillon Iron & Steel Company bought 23,500 tons, of which 14,000 tons were Northern and the balance Southern. Forge Iron is in fairly active demand and prices are very firm, Northern being held at $16.50, Valley furnace, or $17.35, Pittsburgh, and sales are reported of about 3000 tons at this price. A good deal of Southern Forge is coming into this district, one local consumer having taken quite a large tonnage recently. Freight rates from Virginia furnaces to certain points, including Canton, Ohio, and other places have been advanced 20c. a ton.

Steel.—Billets and Sheet and Tin Bars continue exceedingly scarce, and consumers are complaining about slow deliveries by the mills. Billets readily command $26 to $26.50, and Sheet and Tin Bars in random lengths $27 to $27.50, maker's mill.

Muck Bar.—Prices are very firm, and several sales are reported at $32, Pittsburgh.

(*By Mail.*)

The event of the week has been the heavy purchases of Bessemer Pig Iron by the United States Steel Corporation for delivery in the first and second quarters. It has bought from W. P. Snyder & Co. 25,000 tons and from the Bessemer Pig Iron Association 60,000 tons for first quarter, both purchases being at $17.25, Valley furnace, or $18.10, Pittsburgh. It further bought 40,000 tons from W. P. Snyder & Co. for second quarter delivery and is now negotiating with J. G. Butler, Jr., of the Bessemer Pig Iron Association, for a large tonnage, also for second quarter, and the deal is likely to be closed for 50,000 tons or more before this report reaches our readers. A material advance was paid over the first quarter Iron for the Iron for second quarter delivery, and the average price of all the purchases made thus far for first and second quarter delivery and for the Iron now pending will be about $17.50, Valley furnace. These heavy purchases simply mean that the Steel Corporation is taking out of the market much of the surplus Bessemer Iron for the first six months of 1906 and also insures a very strong Pig Iron market for that period. We note a heavy inquiry for Malleable Bessemer Iron for first and second quarter delivery, on which the furnaces are quoting from $17.25 to $17.50, at Valley furnace. We also note considerable inquiry for Foundry Iron. The purchases of 40,000 tons or more of Southern Foundry by the United States Cast Iron Pipe & Foundry Company, and 22,000 tons by the Massillon Iron & Steel Company have stimulated the demand considerably, causing other large consumers to come in the market with a view of covering their requirements for the first half of the year at least. We also note a good deal of inquiry for Forge Iron, which is very firm at $16.40 to $16.50, Valley, or $17.25 to $17.35, Pittsburgh.

There is a moderate inquiry for Steel, Bessemer and Open Hearth Billets readily commanding $26.50 to $27, and Sheet and Tin Bars $27 to $27.50, maker's mill. New business in Rails and Structural Steel continues heavy, but Plates, Steel Bars and other lighter forms of Finished Iron and Steel have shown some falling off. The very favorable weather has permitted the mills to get out an enormous production, and is allowing them to catch up on back deliveries to some extent. There is more movement in Scrap, one prominent consumer having bought upward of 10,000 tons of Heavy Melting Stock. The Coke market is very dull and prices are easier.

Muck Bar.—There is a fair amount of inquiry and the market continues very firm. We quote best grades of local Muck Bar at $31 to $31.50, Pittsburgh, but Eastern Muck Bar continues to be offered at $30 to $30.50, Pittsburgh.

Ferromanganese.—Small lots of Ferro for spot shipment continue to command very high prices, and we note several such sales at $140 to $175 a ton, the price depending altogether on the needs of the buyer. Foreign Ferro for

delivery commencing May or June next is being offered at much lower prices.

Steel Rails.—One Western railroad has placed about 25,000 tons and other contracts amounting to upward of 50,000 tons have been placed since our last report. Trolley roads have also been heavy buyers and the Rail mills are filled up for practically the first nine months of this year. The demand for Light Rails is active and prices are firm, as follows: 8-lb., $36; 10-lb., $32; 12-lb., $30; 16-lb., $29; 20-lb., $28.50; 25 to 45 lb., $27.50 to $28, maker's mill.

Rods.—We note a very active demand for Rods, which are difficult to obtain for prompt shipment. We quote Bessemer and Open Hearth Rods at $34 to $34.50 and Chain Rods $35, maker's mill.

Skelp.—The new demand is not very heavy, but the mills are still much behind on deliveries on contracts. Prices continue very firm, and we quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.70c. to 1.75c., and Sheared Iron Skelp, 1.80c. to 1.85c., Pittsburgh. These Prices are for ordinary widths and gauges.

Plates.—New business in Plates is only fairly heavy, but specifications on contracts continue to come in very freely and the mills are still behind on deliveries, but are catching up on these to some extent. Prices are firm but unchanged, and we quote: Tank Plates, ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A.," and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Structural Material.—A large amount of work has recently been placed. The American Bridge Company has taken about 8000 tons of Structural Steel, to be used in additions to the Homestead Steel Works; also about 1500 tons of bridge work for the Lake Shore at Cattaraugus, and 900 tons for the Berger Building on Fourth avenue, this city. The McClintic-Marshall Construction Company has taken 12,000 tons for the Tidewater Railway, part of this work to be erected in 1907; also 5000 tons for Ore bins and Trestles for the Bethlehem Steel Company; 6000 tons of Elevated Track work for the Chicago & Western Indiana Railroad and 1500 tons for extensions to buildings of the Standard Steel Car Company at Butler, Pa. A great deal of smaller work has been placed. The American Bridge Company is practically filled up for the balance of this year, while the independent Structural concerns are filled up for six months or more. Prices are very firm and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.70c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The new demand for Black and Galvanized Sheets is fairly heavy, but the large trade covered pretty far ahead before the recent advance of $2 a ton in prices was made. Specifications on contracts are coming in very freely and the Sheet mills are quite full of work. Prices are firm and we quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 2c.; Nos. 13 and 14, 2.05c.; Nos. 15 and 16, 2.10c.; Nos. 17 to 21, 2.15c.; Nos. 22 to 24, 2.20c.; Nos. 25 and 26, 2.25c.; No. 27, 2.30c.; No. 28, 2.40c.; No. 29, 2.55c., and No. 30 gauge, 2.65c. We have also advanced Galvanized Sheets $2 a ton, and now quote: Nos. 10 and 11, 2.35c.; Nos. 12 to 14, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.70c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.25c.; No. 28, 3.45c.; No. 29, 3.70c., and No. 30, 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at $3 per square for 2½-inch corrugations. Jobbers charge the usual advances over these prices for small lots.

Iron and Steel Bars.—New tonnage in both Iron and Steel Bars is rather light, but specifications on contracts are coming forward very freely and the mills are filled up with tonnage for three or four months ahead and are still behind in deliveries, but are reported to be catching up to some extent. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots. Iron Bars are quoted at about 1.90c., Pittsburgh, by outside mills, but the official price of the Republic Iron & Steel Company on Iron Bars is 2c., Youngstown, or 2.04¾c., Pittsburgh.

Hoops and Bands.—The new tonnage being placed with the mills is small, but buyers are specifying very freely on contracts placed some time ago at lower prices than are now ruling. Prices are firm and are being rigidly held. We quote Steel Hoops at 1.85c. and Bands to be used for cooperage purposes at 1.85c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—We note a continued active demand for Tin Plate. The leading mills had entered a very large tonnage for delivery up to July 1, prior to the recent advance of 10c. per base box in prices. The American Sheet & Tin Plate Company expects to start its South Sharon Works on Monday, January 22. Prices are firm, and we are told that some mills are asking slight premiums for prompt delivery. We quote Tin Plate at $3.50 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days. Some mills allow a rebate of 5c. a box on the above price to the large trade.

Merchant Steel.—The new tonnage coming to the mills is light, but specifications continue very heavy, and the mills are filled with tonnage and are still somewhat behind in shipments. Prices are unchanged, but firm, and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Demand for Shafting is heavy, which we quote.

Railroad Spikes.—The favorable weather is conducive to a large consumption of Railroad Spikes, and the demand continues heavy, with prices very firm. We continue to quote $2 to $2.05 per 100 lbs., maker's mill, and note that some mills are filled up for several months ahead.

Spelter.—The demand is very quiet and prices are inclined to weakness. We continue to quote prime grades of Western Spelter at 6.45c., St. Louis, equal to 6.57½c., Pittsburgh, but on a firm offer this price will be slightly shaded.

Merchant Pipe.—The demand for Merchant sizes of Pipe continues active and the mills are well filled up with tonnage. Among important work coming into the market is 60 miles or more of 16 to 18 inch Line Pipe for a gas line in western Ohio. Prices continue low, the regular discount being 80 off to the large trade, the quotation of 81 off for Merchant sizes representing the extreme market. Discounts are as follows:

Merchant Pipe.

	Jobbers, carloads.				Consumers, carloads.			
	Steel.		Iron.		Steel.		Iron.	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
	%	%	%	%	%	%	%	%
⅛ and ¼ inch	72	56	69½	53½	71	55	68½	52½
⅜ inch	74	66	73½	61½	73	59	72½	60½
½ inch	76	64	73½	61½	75	63	72½	60½
¾ to 6 inches	80	60	78	68	79	69	77	67
7 to 12 inches	75	60	73	57½	74	59	72	56½
Extra strong, plain ends:								
⅛ to ¾ inch	65	53	62½	50½	64	52	61½	49½
½ to 4 inches	72	60	69½	57½	71	59	68½	56½
4½ to 8 inches	68	56	65½	53½	67	55	64½	52½
Double extra strong, plain ends:								
½ to 8 inches	61	50	58½	47½	60	49	57½	46½

Boiler Tubes.—Very little new tonnage is being placed, as this is the off season, but the mills are fairly well filled up on contracts, on which shipments are being freely made. Official discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	46
1¾ to 2¼ inches	41	58
2½ inches	46	60
2¾ to 5 inches	53	66
6 to 13 inches	41	58

Iron and Steel Scrap.—There is more inquiry for Scrap and, while prices are not as firm as they have been, there is more inclination on the part of consumers to place contracts. We note purchases of upward of 10,000 tons of Heavy Melting Scrap by a leading Steel company for delivery in the next two or three months. We have revised our prices and now quote: Heavy Melting Scrap, $17 to $17.25; No. 1 Wrought Scrap, $19.25 to $19.50; Cast Iron Borings, $10.50

to $10.75; Bundled Sheet Scrap, $15 to $15.25; Old Steel Rails, short pieces, $17.25 to $17.50; long pieces, which are in active demand, are held at $18 to $18.50; Machinery Cast Scrap is $15.25 to $15.50; Cast Steel Scrap, $17.25; Old Iron Axles, $26.50 to $27; Old Iron Rails, $24 to $24.50; Steel Turnings, $13.50 to $13.75; Old Car Wheels, $17.75 to $18, all in gross tons, f.o.b. Pittsburgh.

Coke.—New demand for both Furnace and Foundry Coke is dull and prices are inclined to weakness. This condition is due to the enormous output of Coke and the full supply of cars which the railroads have been furnishing for some time. We quote strictly Connellsville Furnace Coke at $2.60 to $2.65 a ton at oven and Connellsville 72-hour Foundry Coke at $3.40 to $3.50 a ton at oven. Main Line Furnace Coke is being offered at $2.15 to $2.25 and Foundry at $2.85 to $3 a ton at oven. Output of Coke in the Upper and Lower Connellsville regions last week was 376,978 tons.

Cleveland.

CLEVELAND, OHIO, January 16, 1906.

Iron Ore.—A few more sales have been made in the past week from Lake Erie docks. It is expected that a little later on there will be some further buying for 1906 delivery, as it is known that the furnaces have not covered their needs fully. It is possible that the big bulk of this additional material will not be bought until after the middle of the year, when there is some indication of what the business is going to be during the last half. Prices hold as they have been at $4.25 f.o.b. Lake Erie ports for Old Range Bessemer base ore; $4 for Mesaba Bessemer; $3.70 for Old Range non-Bessemer, and $3.40 to $3.50 for Mesaba non-Bessemer. It is said now that many of the larger vessel firms, in view of the prospects for a good season in 1906, have decided not to take much more contract Ore, depending on the wild rates through the year.

Pig Iron.—Buyers have been able to break the price on Foundry Iron in this territory for second quarter delivery. This is due to the fact that many of the furnaces have a good deal of iron to sell still for that delivery. The foundry interests are in a buying mood, and it is the purpose of the furnaces to keep them so. Reports have shown that a good tonnage has been placed on the books at $17.50 for No. 2 in the Valleys for second quarter delivery. There is very little No. 2 for spot shipment, and the market is holding steady at $18 at furnace, with about enough spot material on hand to meet the urgent demands of customers without compelling them to go out of the territory for Iron. It is evident that the market is softer than it was in the last quarter of 1905. The Southern markets have held firm because the principal furnaces there are out of the market for the time being. The recent sale of Bessemer Iron to the Steel Corporation stiffened that market materially. The Iron averaged $17.50 in the Valleys, which is the current price on Bessemer, Basic and Malleable. The demand for Basic is quite good. The Coke market is a little easier, under the better car conditions prevailing. The best grades of 72-hour Foundry Coke are selling at $3.50 at the oven and the best grades of Furnace Coke are selling at $2.60 to $2.75

Finished Iron and Steel.—The demand for Sheets is the strongest point in the market. This trade was down at the heel for the greater part of last year, the large productive capacity from the smaller independent mills being a retarding factor. It seems now that these mills are well filled up with orders. The advance in the price recently made does not seem to have had any effect on the buying, but most of the larger buyers had already covered for the first half, leaving only the smaller consumers to be effected by the recent advance. Quotations out of stock hold at 2.10c. for No. 10 Blue Annealed, 2.75c. for No. 28 One Pass Cold Rolled and 3.75c. for No. 28 Galvanized. Most of the material for the first half of 1906 is already under contract, and the amount of business coming from that quarter is not expected to be large for some time. At present it is largely a question of specifying against old contracts. Sales of plates have been made at 1.70c., Pittsburgh. The demand for Structural Steel is keen and some buying is still reported on a premium basis, although this is not large at present, due to labor difficulties in this territory and to the curtailment of outdoor operations. It was announced last week that another big ship has been placed with one of the lake shipyards, and it is now said that two other orders are pending which will be closed in a short time. Bars have been strong for both Bessemer and Open Hearth. The call for Steel from agricultural implement works and from the finishing mills throughout northern Ohio is especially strong. The price holds at 1.50c., Pittsburgh. There is a good demand for Bar Iron, but the supply is limited, many of the mills being sold up for the first half. We quote 1.70c. to 1.75c., Youngstown.

Old Material.—The supply of Scrap in this territory is large, and some of the dealers are throwing over their holdings in order to clear their yards. The mills have been buying piecemeal, trying to break prices in the meantime, but they have not changed. The following represent dealers' quotations to the trade, gross tons: Old Steel Rails, $16.50 to $17.50; Old Iron Rails, $23 to $23.50; Iron Car Axles, $16.50 to $17.50; Heavy Melting Steel, $17 to $17.50. Net tons: Cast Borings, $9.50 to $10; No. 1 Bushelling, $15 to $15.50; No. 1 Railroad Wrought, $17 to $18; Iron Car Axles, $22 to $23; No. 1 Cast, $15; Stove Plate, $11; Iron and Steel Turnings and Drillings, $11 to $12.

Birmingham.

BIRMINGHAM, ALA., January 15, 1906.

Pig Iron.—This has been an unusually active week in the Iron market, more inquiries and sales having been reported than for some weeks past. The largest buyers have been the Cast Iron Pipe interests, and the largest individual tonnage placed was by a Massillon, Ohio, works for 15,000 tons It is understood that it was in the market for 22,000 tons, 7000 of which was placed with Northern furnaces. A number of smaller contracts, aggregating considerable tonnage, are reported this week. The year 1906 has thus started out with a brisk buying movement, and indications are favorable for a slight advance in the near future. The larger furnace companies, who have their output practically all booked for some time, are averse to any rise, but several of the smaller producers, who withdrew from the market last year, have some Iron to sell and are talking higher prices. Many requests are being received to anticipate shipments on account of the advance of 25c. per ton in freight on March 1, and if railroads can furnish sufficient transportation facilities the movement from this district for the next month and a half will probably break all records, as the furnace people are disposed to favor their customers as much as possible.

The Tennessee Coal, Iron & Railroad Company has completed the repairs and relining of its No. 4 furnace at Bessemer, and it is expected that this and its Alice stacks will be blown in about February 1.

The Central Iron & Coal Company, at Holt, Ala., reports excellent progress in relining its furnace, and hopes to go in blast about February 1. It will use the Coke from the battery of by-product ovens of the Semet-Solvay Company, which have just been completed adjoining the works. The coal tar from these ovens will be shipped to the Ensley plant of the Semet-Solvay Company for further reduction, at which place extensive improvements are being made in order to secure additional by-products.

It is understood that the new directors of the Tennessee Coal, Iron & Railroad Company and the Republic Iron & Steel Company will visit the district this week to inspect their properties. Interesting announcements are expected to follow, as it is rumored that they are considering the purchase of a large coal company operating extensive Coal mines and possessing much valuable mineral land adjoining their own, but confirmation by parties on the inside is lacking.

Old Material.—The market this week has been very steady, with sales aggregating a good tonnage. The dealers report good stocks in their yards and are in position to make prompt shipments. Quotations are approximately as follows per gross ton, f.o.b. cars here:

Old Iron Rails	$21.50 to $22.00
No. 1 R. R. Wrought	19.50 to 20.00
No. 2 R. R. Wrought	18.00 to 18.50
No. 1 Country Wrought	17.00 to 17.50
No. 2 Country Wrought	16.50 to 17.00
Wrought Pipe and Flues	14.00 to 14.50
Mixed Steel	13.00 to 13.50
No. 1 Machinery Cast	12.00 to 12.50
Stove Plates and Light Cast	10.50 to 11.00

Cincinnati.

FIFTH AND MAIN STS., January 17, 1906.—(*By Telegraph.*)

Pig Iron.—The market continues to present a firm aspect, and established prices are being well sustained. Developments would indicate a slightly added strength over the previous week, and while the volume of business done has not been of extraordinary moment there appears to be a settled conviction that more Iron is required for the first quarter than was apparent several months since, and melters as a rule will of necessity be forced to replenish stocks in order to protect present contracts. General inquiry is reported fairly active, and considerable Iron has been sold in small lots for immediate shipment. Gray Forge and the lower grades are in some demand, with prices slightly shaded. In Foundry Iron the principal buyers have been the Pipe works who have taken quite a heavy tonnage during the week. A number of small size orders for Northern brands have been placed during the week at prices ranging from $17.50 to $18, at furnace, with some standard Southern brands at $14, and others, mostly Alabama furnaces, on a $14.50, Birmingham basis for No. 2. We are told that a sale of 500 tons of No. 3 Foundry for prompt shipment was made to a melter in southern Ohio on a $14, Birmingham,

basis for No. 2. A round lot of Northern Car Wheel Iron was sold to a Western manufacturer at market quotations. There is an inquiry in the market from western Pennsylvania for 2500 tons of Southern Foundry and Silvery, and an inquiry for 2000 tons of Basic from Michigan. Freight rates from the Hanging Rock district to Cincinnati are $1.15, and from Birmingham $2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$17.25 to $17.75
Southern Coke, No. 2	16.75 to 17.25
Southern Coke, No. 3	16.25 to 16.75
Southern Coke, No. 4	15.75 to 16.25
Southern Coke, No. 1 Soft	17.25 to 17.75
Southern Coke, No. 2 Soft	16.75 to 17.25
Southern Coke, Gray Forge	15.50 to 15.75
Southern Coke, Mottled	15.25 to 15.75
Ohio Silvery, No. 1 (8 % Silicon)	21.15 to 21.65
Lake Superior Coke, No. 1	19.15 to 19.65
Lake Superior Coke, No. 2	18.65 to 19.15
Lake Superior Coke, No. 3	18.15 to 18.65
Car Wheel Irons.	
Standard Southern Car Wheel	$22.25 to $22.75
Lake Superior Car Wheel	21.00 to 21.50

Coke.—The market is easier and less active. Reports from the Virginia fields indicate that the situation as regards our supply is gradually improving, although in order to keep shipments moving gondola cars have been pressed into service instead of the regular line of box cars which are still short. The situation in the Connellsville district is said to be very satisfactory, with the supply in yards very small. The best brands of furnace grades continue to be quoted from $3 to $3.50, f.o.b. ovens.

Finished Iron and Steel.—All reports received indicate that trade is still active, and conditions generally are as satisfactory as ever. With one or two exceptions Structural work has suffered no delay on account of the weather and new contracts are coming forward for early spring. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; the same, in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—The market is said to be fairly active, and there is a feeling of strength generally. Prices so far as we can ascertain are unchanged. We quote dealers' prices, f.o.b. Cincinnati: No. 1 Railroad Wrought Scrap, $17 to $17.50 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $20 to $21 per gross ton; Steel Rails, rolling mill lengths, $15 to $15.50 per gross ton; Relaying Rails, 56-lb. and upward, $24.50 to $25 per gross ton; Iron Axles, $22.50 to $23 per net ton; Car Wheels, $16.50 to $17 per gross ton; Heavy Melting Scrap, $15 to $15.50 per gross ton; Low Phosphorus Scrap, $18.50 to $19 per gross ton.

CINCINNATI, OHIO, January 15, 1906.

Cincinnati Iron Trade During 1905.—A brief review of the iron trade for the past year shows it in many respects to have been a phenomenal one. Statistics show it to have been the largest in the matter of production in the history of the trade. It was very unlike its predecessor in the way of radical fluctuations in prices, and while there have been recessions and advances the movements have been of great evenness, with no tendency toward extremes. It is somewhat a matter of conjecture, when viewed from a financial standpoint, whether the year's work has been entirely satisfactory to furnace owners. When we take into consideration the fact that a large proportion of their product was apparently disposed of when prices were below the present quotation, that they have been handicapped largely in the matter of securing efficient labor and by the almost utter impossibility of securing sufficient coke to keep their plants in operation, due to insufficient car supply and labor troubles, it is a question whether or not they would like a repetition of the year's business. The foundry trade, considered locally, has not shown any special degree of activity during this period, yet it has had sufficient work to make a favorable showing in the aggregate. In the specialty line, however, there has been a marked contrast, consuming an enormous tonnage of iron and at times finding it necessary to procure a portion of the castings needed from out of town points. Reports from these people indicate that the coming year will be even larger than the past, as contracts entering far into the year have already been made. We append below a table showing the prevailing prices quotable the first of each month, which by way of comparison may prove of interest:

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Southern coke, No. 2	$16.25	$16.25	$16.25	$16.25 to 16.50	$16.00 to 16.25	$15.25 to 15.75	$14.00 to 14.25	$14.50 to 14.75	$14.25 to 14.75	$15.00 to 15.50	$16.25	$16.75
Southern coke, No. 3	15.75	15.75	15.75	15.75 to 16.00	15.50 to 15.75	14.75 to 15.25	13.50 to 13.75	14.00 to 14.25	13.75 to 14.25	14.50 to 15.00	15.75	16.25
Southern coke, No. 4	15.50	15.50	15.50	15.25 to 15.50	15.00 to 15.25	14.25 to 14.75	13.00 to 13.25	13.75 to 14.00	13.25 to 13.75	14.00 to 14.50	15.25	15.75
Southern coke, No. 1 soft	16.75	16.75	16.75	16.75 to 17.00	16.50 to 16.75	15.75 to 16.25	14.50 to 14.75	15.00 to 15.25	14.75 to 15.25	15.50 to 16.00	16.75	17.25
Southern coke, No. 2 soft	16.25	16.25	16.25	16.25 to 16.50	16.00 to 16.25	15.25 to 15.75	14.00 to 14.25	14.50 to 14.75	14.25 to 14.75	15.00 to 15.50	16.25	16.75
Southern coke, gray forge	15.25	15.25	15.25	15.25 to 15.50	15.00 to 15.25	14.25 to 14.75	13.00 to 13.25	13.00 to 13.25	13.00 to 13.50	13.50 to 14.00	14.75 to 15.00	
Ohio silvery, No. 1	19.15 to 19.65	20.65 to 21.15	20.65 to 21.15	20.65 to 21.15	20.40 to 20.65	20.40 to 20.65	19.25 to 19.50	18.15 to 18.40	18.15 to 18.40	19.15 to 19.65	19.40 to 19.65	20.15
Lake Superior coke, No. 2	17.15 to 17.65	17.15 to 17.65	16.90 to 17.15	16.90 to 17.15	16.65 to 16.90	16.65 to 16.90	15.65 to 15.90	15.15 to 15.40	15.65 to 16.15	16.65 to 17.15	17.65 to 18.15	18.65
Lake Superior coke, No. 3	16.65 to 17.15	16.65 to 17.15	16.40 to 16.65	16.40 to 16.65	16.15 to 16.40	16.15 to 16.40	15.15 to 15.40	14.65 to 14.90	15.15 to 15.65	16.15 to 16.65	17.17 to 17.65	18.15
Standard Southern car wheel	18.50 to 19.00	18.50 to 19.00	18.50 to 19.00	18.50 to 19.00	18.50 to 19.00	18.50 to 19.00	18.25 to 18.50	17.75 to 18.25	17.75 to 18.25	18.75 to 19.25	19.25 to 19.50	20.25 to 20.50

German Iron Market.

The Steel Verband's Report.

BERLIN, December 30, 1905.

There has been no let-up in the activity of the German Iron market since my last report. Although the shipments of the Steel Verband for November as just published show a falling off of 28,000 tons as compared with the October movement this is fully accounted for by the fact that the month had two work days fewer than October. The advance of the season has this year been less felt than usual in diminishing the demand for certain classes of products. The Verband's November shipments of group A goods (half-rolled Steel, Rails and railroad materials and structural forms) amounted to 438,459 tons, which denotes a gain of 90,738 tons, or about 26 per cent., over November, 1904. The shipments exceeded the allotments by about 7 per cent.

The Verband's report says that business in half-rolled products is extremely active, that domestic consumers have mostly placed orders for the first half of 1906 and that the foreign market continues to buy heavily, also willingly paying higher prices when demanded. The general position in railroad material, both at home and abroad, is mentioned as continuing very strong, while the prospects for a further increase in the volume of business are pronounced very good. In Structural Material there has been quite recently, adds the report, a very lively turnover; the various establishments are receiving specifications to an extent that must be regarded as highly satisfactory for the time of year, and this gives the promise of good employment of the works during the winter months.

Prices Continue Strong.

The price situation has shown continued strength. On the Düsseldorf Iron Exchange, which registers what might be called the open market prices of Iron in contradistinction to the prices of the great combinations of producers, Iron prices have touched new levels. Spiegeleisen, No. 1A, containing 10 to 20 per cent. of manganese, has reached 81 marks, as compared with 74 on December 1; Thomas Iron (Soft Steel), 68-68.50, against 64-64.50; Luxemburg Puddled, 52-52.80, against 50-52.80; Luxemburg Foundry, No. 3, 60-62, against 60; German Hematite, 72-74, against 72-73; Rolled Steel Wire, 127-132, against 125 marks on November 2.

The Pig Iron Situation.

The situation in the Pig Iron market remains decidedly strong. The furnaces are unable to turn out Iron as fast as called for. The situation for smelters is so favorable that they are about to take steps to advance prices again. An advance of at least 3 marks per ton is regarded as certain, though the chief newspaper of Essen reports that the leading Ironmen of that region are saying that prices must be raised by 6 or 7 marks, which would have to be followed by a further rise of at least 10 marks in Rolled Steel, not to mention a general readjustment of prices for more finished goods. Furnacemen say that an increase of only 3 marks would barely cover the increased cost of Ores and Coke as recently marked up.

The Siegen Pig Iron Syndicate was able recently to make large extra allotments to furnaces that had increased their producing capacity. The demand for Spiegeleisen, a well-known specialty of the Siegen district, is unusually strong. A lot of 10,000 tons is reported as having been taken for the United States for delivery in the first quarter of 1906 and another lot of 7000 tons for the June quarter, while negotiations are in progress concerning a further quantity of 10,000 tons. The growing demand for Spiegeleisen, which comes from both the home and the foreign markets, has led to a considerable advance in the prices of this product. In this specialty the situation has been seriously affected by the troubles in Russia, which have prevented the arrival of the usual supplies of Manganese Ores from that country. For this reason Ferromanganese has risen fully 100 per cent., being very hard to get even at that price, and this has caused a larger demand from Steel makers for Spiegeleisen as a substitute.

Slow Delivery of Ores Hampers Furnaces.

The furnaces in the Siegen district are all again in full blast, but they are still hampered by the slow delivery of Ores ordered. Thousands of tons have accumulated at the mouths of the mines, which the railroads are unable to haul the short distances to the furnaces as fast as the latter require it. Owing to this cause Swedish Ores are in better demand throughout the entire Rhenish-Westphalian region than usual. It may be remarked that many of the great Iron companies of the lower Rhine complain in general of the growing difficulty of keeping themselves adequately supplied with Ores; hence not a few have been trying to buy mines in the Siegen district from which to cover their own needs. It is, however, very hard to get possession of these, as they are mostly owned by families which treat them as heirlooms. Hitherto the Prussian railroad authorities have not yielded to the long standing pleas of the Rhenish-Westphalian industry for sufficiently low freights from the Lorraine-Luxemburg district to make its Minette Ores a fully available source of supply.

After the recent advances of Ore prices in the Siegen region, by 7 marks for Ores as mined and 10 for roasted Ores per carload of 10 tons, the prices there are respectively 121 and 170 marks for the quantities named. At the Nassau mines the price for Ores containing 50 per cent. Iron will be 120 marks for the first quarter of 1906. The advances in Ore prices are said to hit the furnaces pretty hard, as many of those in the Siegen district had sold their output into the autumn of next year at prices based upon former Ore prices.

Apprehensions Regarding Russia.

From the Iron trade in general the reports are about as indicated in previous letters, but the Upper Silesian Verband says that a somewhat quieter tone has been observed there. That region has been affected to a considerable extent by the troubled condition of Russia. This factor, moreover, is beginning to be felt in the German Iron industry as portentious of danger in the not distant future. The Prussian railroads report that the movement of freight to and from Russia has declined to an enormous extent, and it is not unnaturally feared that the German Iron industry will, if these Russian troubles continue much longer, have to suffer along with most other departments of this country's manufacturing industries, Russia being one of the largest buyers of German goods. Russia also gives cause for concern just now in another way for some branches of the German Iron trade. The new Russian tariff makes very onerous increases on some goods, especially electrical machinery, machine tools, &c. On electrical machinery, for example, the new duty is 8.50 roubles, as compared with the old duty of 2.10 roubles per metric hundredweight. The president of the great Allgemeine Electrical Company, Berlin, has recently declared the intention of his company to establish manufacturing branches in Russia as well as in Austria, whose new duties are also very heavy on electrical goods.

Trade Organizations.

The Steel Verband is still occupied with questions of organizations in different branches of the Iron trade and with increases of allotments in some lines. The Bar and Band mills have just failed in a second attempt to get the Verband to increase their allotments by 5 per cent. The reasons for the refusal are said to be partly the fact that the home demand for these products has not kept pace with the foreign, but the reason given by the Verband is that it is inopportune to raise the question of increasing allotments at a moment when negotiations are in progress for organizing the Bar and Band mills. The Verband, however, consented to make an exception of these mills in regard to the new method of paying export drawbacks, as detailed in a former letter, and it also waived the point for the present that drawbacks can only be allowed to manufacturers of finished goods who are organized. It was voted to give a bounty of 7 marks per ton (of Iron consumed) on Bars and Bands for the first quarter of next year. Meanwhile it is understood that the Verband will insist upon the organizations in question being completed.

The Steel Castings Association has been renewed for three years and at the same time prices were marked up. The prospects for this specialty were declared to be favorable.

The Coal Trade Active.

The Coal trade shows undiminished activity. The car famine has been to a considerable extent relieved, the beet crop having been for the most part laid down at the sugar mills. Nevertheless the shortage still reaches on some days as high as 2000 cars. Notwithstanding the heavier movement of Coal the demand is still far beyond the transportation facilities. The Coal Syndicate's November shipments amounted to 5,045,154 tons, as compared with 4,819,500 tons in November, 1904. The increase may be considered quite satisfactory in view of the car famine. Unusual activity is reported from the Coal trade of Upper Silesia and a further advance of prices is projected there.

International Price Conferences.

The conferences held in Paris last week between American and Continental interests have attracted considerable interest in Germany. The precise nature of the conferences is involved in some doubt, the English sources of information representing them as having covered a wider field than do German reports. According to the latter the conferences were confined to Wire Nails, and French and Belgian producers took part with the Americans and Germans in the meetings. Since the Paris meetings the existing German association, which has been in a precarious state for some time, has been prolonged till June 30 next, and the price of Nails has been marked up 50 pfennigs per metric hundredweight (220 lbs.) to 16.50 marks.

BERLIN, January 2, 1906.—The upward tendency in Iron prices has been maintained. As foreshadowed in my last letter, the prices of Bessemer, puddled, and Steel making qualities of Pig Iron have been advanced by 5 marks the ton for the second quarter of this year. The Syndicate also debated the question of marking up Foundry and Hematite Iron, but a decision was postponed. However, it is expected that the advance will soon be made to apply to the latter class of products. Several days ago, too, the price of Puddling Iron was raised 1 franc in Luxemburg and Lorraine for the second quarter. As was mentioned in a previous letter in these columns, the price has been advanced to 64 francs for the first quarter about the end of November. The new price is 65 francs. Moreover, last week the Association of Rhenish-Westphalian Wrought Iron Works advanced prices to counterbalance the recent increase in the cost of Pig Iron and Coal. At the same time the price of commercial forms, screw stock, &c., was raised to 142 marks, and Horseshoe and Nail Bars to 150 marks. About a fortnight ago the prices of crude castings were put up 10 marks. This includes sewerage piping. It is stated that the entire production in Structural Shapes for the first quarter of the year has been sold out at 5 to 10 per cent. higher prices.

This upward movement, it is heard on all sides, will continue. Manufacturers in all lines will regard it necessary to put prices up to a point where recent advances in raw materials will be amply covered. The price situation, as it is frankly said in many quarters, has been greatly strengthened by the strong upward movement in the United States and England. Especially does this apply to the American situation, since the partial withdrawal of American products from neutral markets, owing to the unprecedented consumption at home, creates for the German Iron market a conjuncture of extraordinary promise.

Meanwhile, the American demand for German Iron and Steel has become more urgent. Since my previous letter was written the report, first mentioned in an English publication, that American buyers had arranged at the Paris conference for the shipment of 20,000 tons of German Beams during the first quarter of this year, has been confirmed. At the same time it was said that German works had refused large American orders for Angles for the first quarter, being unable to deliver the goods within the specified time. Just now it is mentioned in the reports from the Essen district that American orders for 35,000 tons of Hematite Pig Iron and 20,000 tons of Spiegelseisen are in the market and waiting for takers. The difficulty with most of these American orders is that they are too urgent as to time of delivery, and most of the German establishments have already booked as much business as they can work off within the period in which the American buyers insist upon delivery.

New York.

NEW YORK, January 17, 1906.

Pig Iron.—There has been good buying in this district, some round lots having been placed. Among them are 1000 tons for a radiator company and 2200 tons of No. 1 and No. 2 for a railroad supply plant, an additional lot of 3000 tons of lower grade being still pending. Prices are firm for nearby and first quarter delivery, but some sellers are making somewhat lower figures for the second quarter, this being particularly true of Southern furnaces. We quote: Northern Iron, No. 1 Foundry, $19 to $19.25; No. 2 Foundry, $18.50 to $18.75, and No. 2 Plain, $18.25 to $18.50, tidewater. Southern Iron is selling at $18.50 to $19 for No. 1 Foundry, and $18 to $18.50 for No. 2 Foundry.

Steel Rails.—New business comes to the mills in a steady stream, and a significant feature is the additional purchases of roads that were presumed to have provided for their full requirements for this year. For example, the Pennsylvania Railroad's additional order for 20,000 tons came in in the past week. The Gould lines have taken 10,000 tons more, and the Minneapolis, St. Paul & Sault Ste. Marie 4000 tons more. The Syracuse, N. Y., Traction Syndicate bought 5000 tons, and the Green Bay & Western 3000 tons. Scattering orders make up a total of fully 50,000 tons for the week, and there is considerable business pending, including three lots which total 35,000 tons.

Structural Material.—A good run of railroad contracting, chiefly for bridge work, has been noted in the past week. The Lake Shore & Michigan Southern Railroad has contracted with the American Bridge Company for 1400 tons of bridge work. The Missouri, Kansas & Texas has placed 3100 tons, a portion of which goes into new shops at Parsons, Kan. The King Bridge Company, Cleveland, got the bridges. For the Southern Railroad the Brown-Ketcham Iron Works, Indianapolis, has taken a contract for 600 tons of bridge work. The Franklin & Clearfield Railroad placed 3800 tons for a bridge over the Monongahela River Another order of the week was that of the Chicago, Milwaukee & St. Paul Railroad for 600 tons, which went to the Wisconsin Bridge Company. The Tidewater Railroad recently placed the remainder of its bridge requirements amounting to about 17,000 tons, of which 12,000 tons was taken by the McClintic-Marshall Construction Company, Pittsburgh. New York building projects are still figured on, but seem to be slow in getting on the order books of the construction companies and the Structural mills. Foreign Steel is being offered here on the basis of 1.80c., New York, duty paid. The usual price for Structural Shapes out of stock is 2.45c., and a steady business is being done by the concerns carrying such stocks. On mill shipments we quote for forward delivery the following prices at tidewater: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch. 0.10c. extra; Angles over 6 inches, 0.10c. extra.

Plates.—Sales agents report an excellent volume of business, with contracts placed in some cases running up to 1000 tons or more. The Eastern mills are still able to make deliveries reasonably early when customers desire urgent shipments. While some manufacturers are asking a slight premium others continue to quote Plates as follows, at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 1.94½c. to 2.04½c.; Fire Box Plates, 2.04½c. to 2.60c., according to specifications.

Bars.—The Eastern Bar Iron mills are so well supplied with work that the specifications now being received on contracts enable them to run on full time. While new orders are not very large, as is to be expected at this time of the year, they are nevertheless coming in with sufficient freedom to keep manufacturers confident of the future. The demand for Steel Bars is fully equal to that for Bar Iron, while in some instances an even better trade is reported. Quotations are continued at 1.84½c. to 1.95c., tidewater, for Bar Iron for prompt delivery and 1.64½c. to 2c., tidewater, according to delivery desired, for Steel Bars.

Cast Iron Pipe.—Manufacturers report the quite frequent receipt of orders running from carload lots up to 1000 tons. This character of demand is very much better at present than is usually the case during the middle of winter. Consumers appear desirous of covering their requirements for the spring as far as it is possible for them to do so at present. The city of New York has not yet advertised for the large quantity of 48-inch Pipe which has for some little time been expected by the trade. Another letting of very large Pipe is also expected by the city of Philadelphia. Carload lots continue to be firmly held at $29.75 per net ton for 6-inch at tidewater.

Old Material.—A decidedly better feeling is perceptible throughout the market. The inquiry has notably increased, probably being stimulated by the reported heavy transactions in Pig Iron. Consumers may be simply feeling the market at present, but dealers believe that much heavier business will shortly result. It is claimed that prices which would have been accepted by dealers last week will not be entertained now. Although quotations are unchanged, they are therefore much more firmly maintained. We quote approximate prices per gross ton, New York or vicinity, as follows:

Old Iron Rails	$22.50 to $23.00
Relaying Rails	25.00 to 26.00
Old Steel Rails, rerolling lengths	16.50 to 17.50
Old Steel Rails, short pieces	16.50 to 17.00
Heavy Melting Steel Scrap	16.50 to 17.00
Standard Hammered Iron Car Axles	26.00 to 27.00
Old Steel Car Axles	21.00 to 22.00
No. 1 Railroad Wrought	21.50 to 22.00
Iron Track Scrap	18.50 to 19.25
No. 1 Yard Wrought, long	19.50 to 20.50
No. 1 Yard Wrought, short	17.50 to 18.50
Wrought Pipe	15.25 to 15.50
Light Iron	11.50 to 12.00
Cast Borings	9.25 to 9.50
Wrought Turnings	13.00 to 13.50
Old Car Wheels	18.00 to 18.50
No. 1 Machinery Cast	15.00 to 15.25
Stove Plate	12.00 to 13.00
Malleable Cast	15.50 to 16.50

Metal Market.

NEW YORK, January 17, 1906.

Pig Tin.—Perhaps the largest single day's business transacted in a year was done on January 16. The Tin sold was mainly for future deliveries, as there is very little Tin for spot delivery in New York City. Various estimates have been made regarding the volume of business, which undoubtedly was over 350 tons, and some place it as high as 500 tons. Sales were made for January, February and March delivery at 36.25c. to 36.40c., according to the month. Spot Tin sold considerably higher at 36.90c. The highest price of the week was reached on January 12, when London quoted spot Tin at £167 12s. 6d. and futures at £168 5s., and metal was sold in New York at 37.10c. There is very little Tin in dealers' hands at present, and probably over three-quarters of the cargo on the Maine, due to-day, has already been sold. This cargo is large, amounting to 1065 tons. Sales of considerable amount have also been made ex-steamship Minnetonka at prices around 36.30c. The heavy business on Tuesday had practically no effect on the London market, which declined to £164 5s. on Wednesday morning. The closing London quotation to-day was again lower at £163 15s. for spot and £164 5s. for futures. The arrivals so far this month have been good, amounting to 1590 tons. The afloats for American ports aggregate 4655 tons. To-day's price for spot is purely nominal at 36.40c.

Copper.—The market is quotably weaker, but has a strong undertone. Lake and Electrolytic Copper for prompt delivery can be obtained at 18.50c. to 19c., according to the volume of takings. It is strangely true that takers of smaller quantities can obtain lower prices than customers for round sized lots. This fact as well as the easement of prices is unexplained, but some light may be thrown on the subject, when it is recalled that the buying price of Copper Ore is regulated by the selling price of the metal. Special brands of Lake, such as Calumet & Hecla and Quincy, are wanted by the Government in a 300,000-lb. lot for May delivery. The best offer that has been obtained for this so far is 25,000 lbs. offered at 21½c. It is reported that the Amalgamated Company is quoting Copper in Europe at 18¾c. for April and 18⅝c. for May. In London prices are slightly easier at £78 5s. for spot, £76 15s. for futures and £85 15s. for best Select. Heavy sales were made in that market to-day amounting to 1200 tons. The exports so far this month amount to about 8628 tons.

Pig Lead.—The market is decidedly easier, and prompt New York deliveries can be obtained at 5.75c. to 5.85c.; at the same time St. Louis quotes 5.85c. This apparent discrepancy in quotations is caused by the fact that practically 1000 tons of Lead have arrived from Europe, which have temporarily, at least, broken this market. In London the price is lower at £16 10s. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 5.60c., but is accepting orders only at the price current on date of shipment. It is understood that this company is well sold up to February 1.

Spelter.—The market is quiet and practically unchanged. In New York 6.50c. to 6.60c. is asked, while the St. Louis market is purely nominal at 6.50c. The London market is easier at £28 2s. 6d. The Ore market in the West is about $1 a ton higher than last week.

Quicksilver.—On the 16th the New York wholesale quotation was advanced from $40 to $41 for flasks of 75 lbs. in 100 flask lots. In London Rothschild's price has also advanced to £7 7s. 6d.

Antimony.—The market is slightly easier and the demand for the time being at least has apparently fallen off. Cookson's and Hallett's are quoted at 14.25c. to 14.50c.; other grades at 13.75c. to 14.50c.

Nickel.—The principal producer is holding ton lots and over at 40c. per lb., smaller quantities at 45c. to 50c.

Tin Plate.—There is practically no change since last week, new business having been dull owing to the advanced quotations, and the fact that consumers had covered their

requirements fairly well before the advance was announced. We continue to quote Full Weight IC Coke Plates at $3.69, f.o.b. New York, or $3.50, f.o.b. Pittsburgh.

Old Metals.—The slight reduction in the price of Ingot Copper has had apparently no effect on the Old Metal market so far as Copper is concerned, and dealers continue to hold fair sized lots at about the following prices:

	Cents.
Copper, Heavy Cut and Crucible	18.00 to 18.25
Copper, Heavy and Wire	17.50 to 18.00
Copper, Light and Bottoms	15.75 to 16.25
Brass, Heavy	11.50 to 12.00
Brass, Light	10.25 to 10.50
Clean Brass Turnings	10.25 to 10.75
Composition Turnings	13.25 to 14.00
Heavy Machinery Composition	15.25 to 15.75
Lead, Heavy	5.40 to 5.50
Lead, Tea	5.15 to 5.25
Zinc, Scrap	4.85 to 5.10
Aluminum Scrap	20.00 to 25.00

Iron and Industrial Stocks.

NEW YORK, January 17, 1906.

Another very interesting week has transpired in the Iron and Steel stocks. Some new high records have been made. The most sensational of these was made by Tennessee Coal, which touched 165 on Friday. United States Steel preferred sold up to 109⅞ this morning. Cambria Steel was run up to 35¾ on Thursday of last week. A very sharp advance was made by Colorado Fuel, which sold up from 57⅞ last Thursday to 74⅞ this morning. Republic common on Friday touched 109⅞ and the common 39. Sloss-Sheffield common reached 97½ on Friday. Among other stocks which have been very strong, especially on Monday and Tuesday of this week, were Car & Foundry common, which reached 45½, Pressed Steel common 63¾, Railway Spring common 62¾ and United States Steel common 45¼. Another stock, which has been very strong during the week, was Virginia Iron, Coal & Coke, which sold at 50½ on Thursday of last week and touched 55⅞ on Monday. Last transactions up to 1.30 p.m. to-day are reported at the following prices: Can common 10½, preferred 70; Car & Foundry common 45⅝, preferred 103; Locomotive common 77⅝, preferred 120; Steel Foundries common 15⅛, preferred 53¼; Colorado Fuel 74½; Pressed Steel common 62⅜, preferred 104; Railway Spring common 62⅛; Republic common 37⅜, preferred 108; Sloss-Sheffield common 94; Tennessee Coal 160¼; United States Cast Iron Pipe 52⅞, preferred 96; United States Steel common 45, preferred 109⅝.

Application has been made to the New York Stock Exchange to list $6,650,000 preferred, $6,650,000 common stock and $3,863,000 sinking fund 20-year 6 per cent. bonds of 1919 of the Central Foundry Company. This company is the leading interest in the cast iron soil pipe trade, although it has latterly been increasing its hold on the general cast iron pipe trade through its universal fittings. The stock and bonds have hitherto been bought and sold in the Curb market, New York. Last week the price of the preferred ranged from 25½ to 29½, the common from 6 to 8 and the bonds from 81 to 84.

The directors of the Tennessee Coal, Iron & Railroad Company have decided to recommend an issue of 70,000 shares of new common stock, par value $100, making the total capitalization $30,000,000. A special meeting of the stockholders is to be held in Tracy City,, Tenn., on the last day of this month to pass upon the proposition. The new stock will be offered to the stockholders at par. The proceeds will be used for improving and developing the property of the company, particularly its very extensive iron ore resources. Details of the extension plans have not been completed; they will be taken up by a committee of steel experts.

Dividends.—The National Steel & Wire Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable January 31.

International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable February 1.

Pittsburgh Forge & Iron Company, Pittsburgh, has declared and paid a cash dividend of 15 per cent.

Pittsburgh stockholders have received notice of a regular semiannual dividend of 10 per cent. and an extra dividend of 5 per cent. declared by the Westinghouse Air Brake Company, Limited, London, England. In the first half of the year a 5 per cent. dividend was paid, and the recent declaration makes 20 per cent. for 1905. While the dividend rate is the same and the par value is nearly the same as in the case of the American Company, the English stock is selling at 120, as compared with 151 to 155 for the American shares. Incidentally, some of the American stockholders in the British company are just learning of a rebate they can receive on the income tax. The company pays an income tax to the British Government. Foreign stockholders have this tax rebated, and it amounts to about $36.40 on 100 shares. Some of the stockholders who have been paying 33 1-3 per cent. to brokers for the collection of this tax have learned that they can readily collect it themselves.

Bethlehem Steel Corporation has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable February 1.

Third International Conference of American States.—At the regular monthly meeting of the Governing Board of the International Bureau of the American Republics, held in the diplomatic reception room of the Department of State in Washington, D. C., December 6, 1905, the Ambassador from Brazil, Joaquim Nabuco, on behalf of his Government, extended an invitation to the Republics of America to hold the third international conference of American States at Rio de Janeiro, July 21, 1906. The invitation was unanimously accepted. The representatives of the various countries interested at this meeting were as follows: the Secretary of State of the United States, chairman; Ambassador of Brazil, Ambassador of Mexico, the Ministers of Haiti, Costa Rico, Nicaraugua, Chile, Cuba, Bolivia, Guatemala, Argentine Republic and Colombia; the Chargé d'Affaires of Venezuela and Uruguay, and the counselor of the Paraguayan Legation. Ecuador was represented by the Costa Rican Minister. Appropriate committees were appointed to prepare a programme for the third international conference; to prepare preliminary regulations for the conference, and also to prepare regulations to be reported to the conference for the government of the reorganization of the Bureau of American Republics as an institution of permanent character.

The Susquehanna Iron & Steel Company.—Receivers Slaymaker and Kauffman have filed their second account with the Lancaster County courts. The statement of operations of the company under the receivership from December 1, 1903, to December 1, 1905, shows the net amount of sales and earnings in the two years to have been $2,504,288; manufacturing and operating expenses, $2,417,578; net earnings, $86,709. B. F. Conner, general superintendent of the company, in his report to the receivers, says: "It is only in the last three months that we got the plants in such physical condition that they could be operated at a profit, and from the present outlook in the iron business I feel safe in saying that from now on the business of the company should be profitable and in a reasonable time we should be able to hand the properties back to the stockholders with the debts paid and ready to resume dividends."

The LaBelle Iron Works Appraisement.—Julian Kennedy, Pittsburgh, the well-known consulting engineer, has had charge of the appraisement of the properties of the LaBelle Iron Works, Steubenville, Ohio, preparatory to the taking over of this company by new interests. The appraisement covered the blast furnaces, steel plant and finishing mills at Steubenville, finishing mills at Wheeling, W. Va., coke plants in Fayette County, Pa., and Randolph County, W. Va., and ore properties in the Lake Superior District. It is now expected that the new interest, whose identity has not yet been disclosed, will take possession March 1. Edwin N. Ohl, Pittsburgh, has secured options on about 92 per cent. of the preferred stock of the company, which amounts to $7,000,000.

The American Can Company has won its detinning suit. At Newark, N. J., January 15, the court decided in favor of the company in the suit brought against it by the Vulcan Detinning Company. The suit grew out of the contested right to use a secret process by which tin is recovered from tin scrap. The judge's decision reviewed at length the evidence taken in England, Germany, Belgium and the United States during the last two years and reached the conclusion that the American Can Company is the legal owner of the right to use the process, having obtained its license to do so from the inventor, T. Goldschmidt of Essen, Germany.

The Treasury Department announces that a drawback will be allowed J. G. Brill & Co., Philadelphia, on the exportation of street railway cars, in the manufacture of which imported car wheels and imported car wheels and axles are used.

The World's Shipbuilding in 1905.

In the annual review of shipyards of the world published in the *Glasgow Herald* the returns from all countries show increases of 61 vessels, 491,281 tons and 100,506 indicated horse-power as compared with the year previous. The number of vessels built throughout the world was 2393, with a tonnage of 2,943,930 and indicated horse-power of 2,469,505. The United Kingdom and its colonies produced 1300 vessels, 1,816,578 tons and 1,506,888 indicated horse-power, thus exceeding the total production of all the other countries in the world by 207 vessels, 678,226 tons and 544,280 indicated horse-power. The returns from Great Britain show a record year in shipbuilding, with 1236 vessels, 1,805,968 tons and 1,501,859 indicated horse-power, an increase of 112 vessels, 429,838 tons and 162,887 indicated horse-power. The development of the shipbuilding industry in the United Kingdom is readily seen from the fact that its increase of last year over the previous year is greater in tonnage than the entire production of any one of the other countries. Though the United States came next in importance, with 146 vessels, 368,775 tons and 199,487 indicated horse-power to its credit, the deplorable state of the industry is shown by the decrease on the preceding year of eight vessels and 136,157 indicated horse-power. There was, however, an increase of 43,950 tons. The increase in tonnage and decrease in indicated horse-power are due to a great extent to the building of large cargo carriers on the Great Lakes and war vessels at the seaboard yards.

The work of two years in countries outside of Great Britain and her colonies is shown in the following table:

	1904.			1905.		
	Vessels.	Tons.	I. H. P.	Vessels.	Tons.	I. H. P.
United States	154	324,825	336,635	146	368,775	199,478
Germany	282	271,942	181,927	310	312,400	269,200
France	95	143,390	244,435	78	101,073	190,300
Netherlands	199	84,060	47,718	196	92,522	51,640
Italy	38	60,969	76,400	22	58,193	39,180
Norway	74	53,028	34,210	64	52,670	31,962
Japan	71	34,016	43,841	146	47,458	81,305
Austria-Hun	49	28,098	24,455	45	27,675	18,970
Russia	23	5,449	1,190	23	25,985	41,523
Denmark	21	13,836	11,355	17	17,124	10,875
Sweden	31	9,482	9,257	14	12,153	25,110
China	68	12,702	3,078	20	6,429	2,460
Spain	2	1,144	....	2	2,861	....
Belgium	15	8,457	3,890	10	2,034	605
Greece	2	35	570	..	....	....
Totals	1,124	1,051,433	1,018,961	1,093	1,127,352	962,608

Marine Steam Turbines.—The rights to build Parson's marine turbines in the United States are stated to be held by no other parties than the Allis-Chalmers Company, Milwaukee, Chicago, Cincinnati and Scranton; Wm. Cramp & Sons' Ship & Engine Building Company, Philadelphia; W. & A. Fletcher Company, Hoboken, N. J.; Quintard Iron Works, New York, and Bath Iron Works, Bath, Maine. The Allis-Chalmers Company is not only a licensee under the Parsons marine turbine patents but it also holds the rights for manufacturing the Parsons turbine blowers and compressors, and has recently formed an alliance with Charles A. Parsons, the turbine inventor, for a full co-operation and interchange of data on steam turbines for land operations. It is at the present time practically doubling its immense plant at West Allis, Milwaukee, Wis., the greater part of the new shops being intended for an extension of its steam turbine work and the electric generators to be driven by such turbines. At the West Allis Works the company will build marine steam turbines for the great lakes and for the Pacific Coast, and both there and at its Scranton works will build marine turbines for the Atlantic trade.

Spang, Chalfant & Co., Incorporated.—This company, operating the Etna Iron & Tube Works, Pittsburgh, held its annual meeting January 15, electing the following directors: Henry Chalfant, Charles H. Spang, David E. Park, D. B. McClelland and A. M. Bell. The directors organized by electing Henry Chalfant president; D. B. McClelland, vice-president and treasurer; A. M. Bell, assistant treasurer, and W. C. Heath, secretary. The company is installing considerable new equipment and making additions by which the capacity of its plant will be extensively increased. The output consists of iron and steel pipe from ⅛ inch to 24 inches in diameter and lap weld iron and steel boiler tubes for all purposes.

Labor Notes.

The effort for labor legislation at Washington has been renewed in the present Congress. In the House a number of eight-hour bills have been introduced. A successor has also been introduced to the antiinjunction bill which was so vigorously pressed for passage and more vigorously resisted in the last Congress. In the Massachusetts Legislature an eight-hour bill for public employees has been introduced; also a bill to make picketing lawful in cases of strike.

A lockout of boiler makers is reported at Buffalo, N. Y. The reason given by the manufacturers is the restriction of output enforced by the union boiler makers in that city. New men are being taken on in nearly all the shops.

The Allied Iron Association of New York has put to work nearly 600 men in place of the structural iron workers who went out on strike at the beginning of the year for an advance to $5 a day and the closed shop.

The coremakers of Indianapolis, Ind., have notified their employers that they will ask for an increase of 2½ cents an hour, beginning February 1. They now receive 25 cents an hour.

At the bi-monthly conference held at Youngstown, Ohio, last week between representatives of the Amalgamated Association and the Republic Iron & Steel Company, it was found that the average price of bar iron shipped in November and December entitled puddlers to an advance of 25 cents a ton, or from $5.50 to $5.75, while finishers were entitled to an advance of 2 per cent. The average price of shipments in November and December was slightly above 1.5 cents. It is expected that when the next wage conference is held in March puddlers and finishers will receive a further advance.

Employees in those sheet and tin plate mills of the American Sheet & Tin Plate Company in which the Amalgamated Association scale is signed expect an advance in wages after March 1, due to the recent advance of $2 a ton in the selling price of black and galvanized sheets and 10 cents a box for tin plate. The wages for tin plate mills are based on tin plate selling at $3.40 per base box and for each 10 cents advance per box the men receive 2 per cent. advance in wages.

The Sharon Steel Hoop Company.—Changes recently made among officials of this company, whose headquarters are in Pittsburgh, works at Sharon, Pa., comprised the election of J. W. Tedford vice-president, succeeding John R. Hastings, resigned; O. A. Blackburn treasurer, succeeding A. M. Perkins, resigned, and R. A. Winterburn secretary. The company is installing five gas producers in its plant, which are being built by William Swindell & Brothers, German National Bank Building, Pittsburgh.

The Harbison-Walker Refractories Company.—The annual meeting of the stockholders of this company was held in Pittsburgh January 15, at which the following directors were elected: S. C. Walker, H. W. Croft, Hay Walker, Jr., H. F. Bigler, George W. Reese, T. H. Given, Hamilton Stewart, W. A. Stanton, T. L. Chadbourne, Jr., L. C. Turley, O. M. Reif, J. E. Lewis, Hay Walker, R. W. Harbison, W. B. Wigton. Net earnings for the year ended September 30, 1905, as shown in the annual report recently issued, were $1,169,939, and after all charges there remained a surplus of $350,215.

The Machinery Trade.

NEW YORK, January 17, 1906.

There were some important developments in the trade during the past week which give signs of the early consummation of some of the large projects. One large corporation has extensive inquiries in the market, but it is expected that another week or two will elapse before the anticipated long lists of tools will be issued. In some instances all obstacles to the carrying out of extensive plans have been overcome, and the only remaining work is the completion of the specifications for buildings and equipment. As soon as this shall have been done machinery merchants will, no doubt, be favored with substantial orders. In the meantime a good volume of business is being done, mostly in small lots. The interesting question has arisen with one large company whether it is good business policy to hustle after orders when it cannot make deliveries with its present facilities for seven months or more. The company intends to materially extend one of its plants as soon as possible to place itself in a position to produce a much greater number of machines.

The Niagara Frontier Purchasing Agents' Association, which was recently formed by purchasing agents in the vicinity of Buffalo, N. Y., will hold a meeting this week at Buffalo, when William A. Stanton of New York will deliver an address on "Refractories and Fire Brick." The association is made up of the buyers representing a number of the large manufacturing companies of Buffalo, Niagara Falls and vicinity, and it was organized for mutual help. The members of the association are: J. N. Allen, Lackawanna Steel Company, Buffalo; C. B. Porter, Sizer Forge Company, Buffalo; D. C. Howard, Delaney Forge & Iron Company, Buffalo; B. W. Robb, Jacob Dold Packing Company, Buffalo; H. C. Frey, General Railway Signal Company, Buffalo; H. W. Newton, Contact Process Company, Buffalo; E. T. Lyon, Larkin Company, Buffalo; J. G. Joseph, Buffalo Steel Company, Tonawanda, N. Y.; E. W. Kerr, Pratt & Letchworth, Buffalo; N. W. Shedd, Buffalo Foundry Company, Buffalo; S. F. Scheu, Frontier Telephone Company, Buffalo; E. J. Harris, Schoellfopf, Hartford & Hanna, Buffalo; R. C. Adams, Buffalo Pitts Company, Buffalo; G. W. Whittemore, Bell Telephone Company, Buffalo; C. C. Mosher, Union Carbide Company, Niagara Falls, N. Y.; A. D. Kysor, Carborundum Company, Niagara Falls, N. Y.; J. S. Keeler, Gould Coupler Company, Depew, N. Y.; M. L. Cramer, Snow Steam Pump Works, Buffalo. The officers are: J. N. Allen, president; B. W. Robb, vice-president; M. L. Cramer, secretary and treasurer. The principal reasons for the organization's existence, according to its officers, are for the exchange of views on relative value of material to be used for any particular purpose, general market conditions, system, &c. While it is not the intention of the association to exchange confidential information, such as prices made by various firms for material, it is stated that the members propose to stand together as a body, as they find it necessary to do so in order to protect their interests. The next meeting of the association will in all probability be held in Niagara Falls, and the discussion at that time will be on "System at a Buyer's Office," which will include the matter of keeping track of prices, following up orders until shipment is made and general routine work of this sort. When the association started in Buffalo it was thought that there was no organization like it in the country, but it has since been discovered by the members that a similar association has been in existence in Boston, Mass, for about two years It is the intention of the Niagara Falls Purchasing Agents' Association to establish correspondence between the two associations, and it is probable that it will result in the establishing of other organizations of the kind throughout the country.

W. P. Pressinger, general manager of the air compressor department of the Chicago Pneumatic Tool Company, New York, returned recently from a trip to the Pacific Coast, during which he visited the company's numerous agencies at Denver, Salt Lake, Butte, Spokane, Seattle, Portland, San Francisco and Los Angeles, and arranged for the establishment of several new agencies at points where the rapidly growing business of the company warranted. Mr. Pressinger speaks enthusiastically of the business conditions prevailing throughout the West and of the opportunities existing for the development of increased business.

Important Machinery Requirements.

One of the most important happenings of the week and one in which the trade will be greatly interested in view of the large purchases of machinery it will entail, is the plan of the Norfolk & Western Railroad to make extensive improvements at Roanoke, Va. For the improvements $1,000,000 has been appropriated by the Board of Directors, of which amount $800,000 is to be expended on yard improvements and $200,000 for shop extensions and equipment. It is understood that plans are under way for these improvements, and as the necessary funds have been provided, work will probably be commenced as soon as the plans can be completed and contracts let.

The Central Railroad of New Jersey is planning for the erection of a large freight and passenger yard at Jersey City, which will cost in the neighborhood of $1,500,000. The improvements will also include a new roundhouse and turntable to relieve the lower yard, and the mechanical requirements for the freight yard will include machinery for lifts and considerable power equipment. The company will also extend its passenger station, and as that will be some distance from the freight yard, extra power equipment for the elevators, &c., and equipment for the heating plant will probably be bought.

It is likely that the Brooklyn Rapid Transit Company, Brooklyn, N. Y., will again come into the market very shortly for considerable machinery for its proposed new shops at its Thirty-sixth street yards, the contract for the erection of which has been let. We understand from reliable authority that the machinery for equipping these new buildings has not yet been purchased. The company recently placed orders for several additional steam turbines for its new Kent avenue power station.

The electrification of the West Jersey & Seashore Railroad, which is in the hands of Stearn & Silberman and the General Electric Company, will necessitate the purchase of 52 car bodies, and an equal number of trailer trucks and motor trucks for which the purchasing agent of the Pennsylvania Railroad Company is now in the market. Only a very small detail of the equipment of the electric road will be handled through the direct channels of the railroad company, for the reason, which has already been stated in these columns, that the work will be handled by contract. The car equipment for the electric road is the most important of the inquiries in the Pennsylvania Railroad Company during the week, as the number of tools and machines for which inquiries have been made is of an almost negligible quantity. However, the programme of the year will be found, when authorized, to be one of the largest issued by the company. Reports from each division indicate that the increased necessity of quick work in repairs and supplying new equipment to meet transportation emergencies will necessitate larger purchases of tools and machines of advanced type to meet the demands of the service.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has received a contract from the Grand Trunk Railway for the electrification of its track in the Sarnia tunnel, under the St. Clair River, which is the connecting link of the company's line between Port Huron, Mich., and Sarnia, Ontario. The contract calls for six 1,000 horse-power alternating current single-phase electric locomotives, the electric power station equipment, electric lighting plant, and all additionally required station and track apparatus. The tunnel is about six miles long and only a single track runs through it, which makes it the busiest piece of line on the whole Grand Trunk system. Heretofore this work has been done by steam locomotives, but the new system is expected to prove much more efficient and economical, while the absence of smoke, gas and dirt will add considerably to the easier operation of trains.

The Bethlehem Steel Corporation has inquiries in the market for 40 inch blooming mill and equipment for other improvements to be added to its plant at Bethlehem, Pa. The list of requirements is very large, and it includes a considerable quantity of heavy machinery. It is understood that no orders have been placed as yet, but that will be done before long, as it is the intention of the company to construct the proposed extensions as soon as possible.

New York is to have another large foundry, the equipment for which will mean considerable to the machinery trade. R. Hoe & Co., whose large printing press plant is on Grand street, have bought 14 lots on Broome street and the East River, where they intend to erect a new iron foundry about 100 x 200 feet. The plans have not yet been completed and no equipment has been purchased. The newly acquired property is separated from the river only by the width of East street, and material can be easily transferred from steamship and lighter.

The Greenville Works of the Carnegie Steel Company, at Greenville, Pa., were practically destroyed by fire last week, entailing an estimated loss of $500,000. It is understood that the plant will be rebuilt as fast as possible, and considerable new equipment will be needed. The output of the works was iron and steel bars and skelp and cold pressed nut iron. The Carnegie Steel Company has spent a large amount of money on the Greenville mills in the past year, and it was one of the best equipped plants owned by the company.

Milliken Brothers, 11 Broadway, are still placing orders for their new open hearth steel plant and rolling mill on Staten Island. During the last fortnight contracts were let for the electric generators to the Westinghouse Electric & Mfg. Company, and for the engines to operate the electric power plant to the C. & G. Cooper Company, Mount Vernon, Ohio. The contract for the table work in connection with rolling mills has been let to the Union Machine & Foundry Company, Pittsburgh, and the Morgan Engineering Company, Alliance, Ohio.

The Pennsylvania Coal Company is buying equipment just now for a new power plant to be erected in connec-

tion with the Old Forge Colliery, at Old Forge, Pa. McClave, Rimmer & Co., 95 Liberty street, New York, has secured orders for two 500 horse-power and one 200 horse-power engine for direct connection, to two 350 and one 150 k. w. Westinghouse three-wire generators. The supplies are being purchased by the purchasing department of the Erie Railroad, which controls the Pennsylvania Coal Company, and the list of requirements which was put before the trade within the week is quite large. McClave, Rimmer & Co. have also secured an order for three engines of 100 horse-power each, to be direct connected to generators from the Long Acre Realty Company for the new Hotel Lexington, which is being built at 145 to 155 West Forty-seventh street.

The Chicago Pneumatic Tool Company, Chicago and New York, states that on account of the compressor business being offered exceeding its manufacturing capacity, amounting to only 400 compressors during the year 1905, that arrangements are now under way for increasing the capacity of its compressor works at Franklin, Pa., so as to give it an annual output of between 650 and 700 compressors. A large volume of business was lost to the company during 1905 on account of inability to make deliveries.

While American manufacturers have not by any means established a substantial trade with India, a number of large houses of late have received orders for machinery from that country through buying agents and in some cases through some customers there. A short time ago a firm that does considerable trading with Japanese consumers established connections in India and considerable trade resulted. Only last week a number of machinery houses received inquiries from N. Joachimson, 129-131 Front street, New York, who has some extensive orders from India. The firm is particularly anxious to obtain catalogues and prices on the following list of machinery for export to India: Envelope making machines, hand and power; hosiery machinery, hand and power; thread ticket machines, hand and power; flour mill, hand and power, single and double buhr stones; rice hullers, power and hand machines; machines for weaving; cotton gins, hand power; centrifugal pumps, lift and force pumps for deep wheels, aloe and plantain fiber extracting machines, hand and power; engines and boilers of from 2 to 50 horse-power.

The Case Mfg. Company, 85 Liberty street, New York, has received an order for a 15-ton 50-foot span crane from Thomas S. Jackson, Waterbury, Conn., to be installed in his stone yard.

The George N. Pierce Company, Buffalo, N. Y., manufacturer of automobiles and bicycles, has acquired 25 acres of land in the northern section of Buffalo, on the New York Central Railroad Belt Line, where it will construct a new plant of large dimensions, with thoroughly up-to-date equipment, for the manufacture of automobiles and motor vehicles.

The Canada Chemical Mfg. Company, London, Ont., has recently secured some valuable ore properties, principally cobalt and nickel, in northern Ontario, and has decided to erect a large chemical plant at a central Ontario point, northeast of Toronto, convenient to the source of ore supply, where acids and chemicals will be produced from the treatment of the ores. Work on the new plant will be commenced early in the spring. The company will continue to operate its London plant as well as the new plant.

Another terminal that will call for some rather extensive power equipment will be the new terminal of the Hudson Company's tunnels in New York, for which excavations are now being made. The plans provide for twin structures 23 stories high and the buildings, which will occupy the two blocks between Fulton and Dey streets and Dey and Courtland streets, facing Church street, will be begun before spring, it is expected. The power equipment will not be purchased for some time as yet, as the plans for the buildings have not been filed with the Rapid Transit Commission.

Business Changes.

The Vandyck-Churchill Company, New York, dealer in machine tools, has recently opened an office in the Farmers' Bank Building, Pittsburgh. In addition to its present line of tools the company will have the Pittsburgh sales agency of the American Tool Works Company, Cincinnati, builder of lathes, planers, radial drills, shapers and drill presses. Albert G. Lee of Philadelphia, will have charge of the office until February 1, at which time a permanent man will be appointed manager.

The increasing business of the Westinghouse Electric & Mfg. Company in the territory covered by its Columbus, Ohio, office has necessitated the moving into larger quarters; after January 15 the office will be located in Room 923 Columbus Savings and Trust Building.

The National Founders' Association brings out in the last issue of its *Review* a full synopsis of the proceedings of the ninth annual convention of the association, held in New York November 15-16, 1905. It makes a pamphlet of 106 pages.

Philadelphia Machinery Market.

PHILADELPHIA, PA., January 16, 1906.

There has been a good demand for machinery and tools during the past week. Early January as a rule is rather unproductive of large specifications, and while business, considering the season, has been good, it has been made up mostly of small orders, the majority of which have been for single tools. Here and there, however, a few tools are taken and occasionally an order for a fair sized lot materializes, but the latter are few and far between. The demand fairly well covers the full range of tools and machinery. Small tools have recently been in better demand and some sizes and classes are hard to obtain with any degree of promptness. Inquiries are more numerous, however, and while the individual requirements are not large, the number coming out is gratifying to the trade generally. Some fair propositions are looked forward to at an early date; one which aggregates probably $10,000 worth of tools is expected out before the end of the month. Purchases or specifications from the various railroads have been light and the trade does not expect any great volume of buying from that direction for some time. Small orders for a few tools, however, will no doubt be received from time to time as necessity demands.

Manufacturers of tools and machinery are busy. Orders on hand are sufficient to keep the greater proportion of manufacturing plants in constant operation at full capacities months ahead. Annual stock taking and balancing of accounts have occupied the time of manufacturers to a large extent since the first of the year, and until these matters are concluded the policy of many concerns for the year will not be fully decided.

The foreign demand is unchanged. In some lines an improvement has been noted since the first of the year, but under existing conditions it is impossible to foresee just what developments will take place in the future regarding this branch of the trade.

Deliveries on certain lines of tools are daily becoming more extended. Owing to pressure of buyers for delivery, dealers are unable to keep sample tools on their floors, and as manufacturers are unable to supply the demand the display floors in a number of cases have taken on a somewhat ragged appearance. Some sizes of the smaller tools are as scarce as the larger ones, and three to four months is not unusual delivery for these tools. Heavy machine tool builders have orders on their books for a large number of tools and do not see their way clear to make deliveries on certain tools and sizes inside of six months.

Foundries are daily taking on more work. The steel casting plants have more business offered than can, in most instances, be conveniently handled, and deliveries for this class of work are not as good as customers would like. Gray iron foundries are busy and are turning out a better tonnage than at any time since the inauguration of the core makers' and molders' strike.

The city of Philadelphia, through the Department of Public Works, will receive proposals January 23 for a new boiler house to be erected at Lardner's Point, in connection with the pumping station located at that point, previous mention of which has been made in these columns.

W. E. Shipley, machinery merchant, The Bourse, estimates the volume of business transacted by him during the past year as two and one-half times greater than that of 1904 and fully 50 per cent. larger than that of 1903, which was his best previous year. While a large number of lathes have been sold, the demand has been well divided among the various lines represented. Business for 1906 looks very promising and Mr. Shipley enters the new year with a larger percentage of business on the books than ever before.

H. B. Underwood & Co., manufacturers of railroad shop repair tools, have recently received orders for three portable valve rotary planing machines and three portable crank pin turning machines for exportation to railroads in South America, and have had considerable inquiry for these tools from other foreign countries. Domestic orders have been good, particularly from the Western roads, which have recently taken a number of portable boring bars, three of which have been shipped to the Mobile & Ohio Railroad. The plant of this company is busy in all departments, especially that of repair work, of which a large amount is on hand.

The Espen-Lucas Machine Works notes a good demand for all its lines of tools—better, in fact, than has heretofore been the custom at this season of the year. There has been some good foreign inquiry and the outlook for business is considered most excellent. A horizontal floor boring machine has been shipped recently to parties in the West, while a number of crank shaft cutting off machines have been furnished various automobile and crank shaft manufacturers. Foundry cold saw machines for driving high speed inserted tooth saws have been supplied to several steel casting plants, and bar and I-beam cutting off machines have also been delivered parties in this and other sections of the country.

Dienelt & Eisenhardt, Inc., are very busy in all departments. An order for a large oil cloth printing machine for export has been recently received, as have also a number of

orders for electric motors and generators. The demand for hydraulic jacks, particularly for railroad use, has been very good, while that for dead stroke steam hammers has considerably improved. Inquiries for their various lines have increased and a good volume of business is anticipated during the spring months.

The E. H. Mumford Company reports a good demand for the standard sizes of split pattern and power ramming molding machines, while that for the larger special sizes is increasing. Business during the past month has been better than anticipated and orders for five combined jar ramming and patent drawing machines and a number of power rammers for parties in this State are to be noted. Orders for power rammers and split pattern machines have also been received from foundries in New York State, the New England States and the Middle West. Deliveries during the past month have exceeded those for any previous month in the company's history.

The Philadelphia Roll & Machine Company has during the past year broken all previous records for tonnage produced, averaging over one million pounds of charcoal iron castings per month. The demand for both chilled and sand cast rolls continues large, a recent order for 24, aggregating over 200 tons weight, for one concern being noted. Deliveries by this company during the last month have been large and include shipments of rolls to many of the large steel and iron mills. There has also been a good demand for charcoal iron castings, mostly of the heavier types. The general outlook for business during the year is considered most favorable.

Chicago Machinery Market.

CHICAGO, ILL., January 16, 1906.

Since the close of the holiday season there has been a general revival of demand for all classes of machine tools and power plant equipment, and the outlook for the year throughout the West is decidedly encouraging. The tremendous improvement programme outlined by the Illinois Steel Company, which will entail a large expenditure for new mills and equipment at the South Works as well as at Joliet and Milwaukee, includes new boiler capacity aggregating nearly 10,000 horse-power as well as blowing engines, generators, condensers, &c. Some of the contracts for rolling mill machinery have already been let, but the bulk still remains unplaced. Contracts for the new work at Buffington have not yet been awarded nor have specifications been promulgated. However, as it is the intention to have at least a portion of this plant in operation next year, the preliminary work will soon be done and machinery builders will be invited to make their estimates. Much building is also under way, and in the large structures that are being erected in the downtown district the power plant requirements are of no mean proportions. Specifications for the equipment of the county building referred to in detail in this report were issued last week and contracts will be awarded on February 5. Machinery dealers report continued heavy sales of individual tools, the advanced prices which generally went into effect on January 1 evidently not deterring users from placing orders. Second-hand machinery also continues to move in good volume, and high prices prevail on desirable machinery in good condition.

The Gardner Governor Company, Quincy, Ill., contemplates the erection of a branch foundry at La Grange. Details of the building have not been arranged.

The Ferguson Mfg. Company, manufacturer of well drilling machines and tools, Waterloo, Iowa, has found it necessary by reason of a heavy pressure of business to make additions to its plant. The company was organized about a year ago and reports a successful first year's business. Equipment for the enlargements, including lathes, planers and other tools, was purchased through Chicago dealers. Additional machinery will be purchased from time to time as the business increases.

Specifications were submitted to bidders last week on all the work involved in the new County Building. Bids will be received by the County Commissioners at 218 La Salle street, Chicago, until February 5. The proposals of direct interest to the machinery trade include a complete boiler plant, consisting of boilers, furnaces, breeching, trimming and accessories. Five water tube boilers are required, installed in one double battery of two boilers and three single batteries. Four proposals must be submitted by contractors as follows: No. 1, boilers complete with shaking grates; No. 2, boilers complete with mechanical stokers or traveling grates; No. 3, boilers complete with shaking grates and superheaters; No. 4, boilers complete with mechanical stokers or traveling grates and superheaters. Boilers will have a working pressure of 160 pounds. If mechanical stokers or traveling grates are provided, the type prescribed is either a Babcock & Wilcox, Aultman-Taylor, McKenzie or similar make. If shaking grates are installed, one of the Dorrance make or equal will be required. Operation of the grates and stokers will be effected through two single cylinder, vertical stoker engines. A separate bid is also asked on an additional 350 horse-power boiler. Coal and ash handling machinery call for ash cans, one for each boiler, coal conveyor having a capacity of 60 tons per hour, turn table, scale hopper and ash hoists, together with motors for operation. The specifications call for the furnishing of four horizontal engines direct connected to generators. Two of the engines will be 450 horse-power connected to two 300-kw. generators; one single cylinder, 300 horse-power, engine direct connected to one 200-kw. generator, and one single cylinder, 175 horse-power, engine direct connected to one 100kw. generator. Separate bids will be asked on one additional 450 horse-power cross compound engine connected to one 300-kw. generator, and one additional 600 horse-power cross compound engine connected to a 400-kw. generator. The generators must be General Electric, Westinghouse, Crocker-Wheeler, Bullock or equally good make. Bids are also asked on an open type feed water heater with a rated capacity of 2000 horse-power; two vertical duplex boiler feed pumps guaranteed to deliver 125 gallons per minute; two vertical, electrically driven, single acting, triplex house pumps guaranteed to deliver 150 gallons per minute; two 18 x 10 x 12 inch Underwriters' fire pumps; two steam driven centrifugal emergency pumps capable of delivering 1000 gallons per minute, and high pressure steam connections between boilers, engines, pumps, &c.; all exhaust connections to the steam driven apparatus; high and low pressure steam connections to service heaters, and all drips and drain piping. An elevator system will be installed, consisting of seven pumps, two accumulators, two tanks, a Westinghouse air pump, piping, car platforms, guides, &c., designed to operate 14 passenger elevators and five vertical, direct lift plunger type hydraulic hoists. The refrigerating plant will consist of a condenser to supply 120 gallons of distilled water per hour and two water circulating pumps to deliver 400 gallons of water per hour. Three rotary balanced equipments designed to balance lighting load on the three-wire system of electric mains in the building, a complete switchboard equipment and a vacuum compressed air plant are also specified.

The St. Anthony Falls Water Power Company, Minneapolis, Minn., has plans under consideration for a new power station to be erected at the Falls of St. Anthony on the Mississippi River. A preliminary survey is now being made for a station to develop about 6000 horse-power. It is too early to give a detailed list of the machinery required. Wm. De la Barre is engineer, agent and treasurer of the company.

The World's Star Knitting Company, Bay City, Mich., is having plans prepared for a new mill, and will solicit bids in February for the following equipment: Two 125 horse-power boilers, one 125 horse-power engine with 80-kw. direct connected generator, freight elevator and a number of individual motors from 5 to 15 horse-power.

The Pressed Steel Tank Company, Milwaukee, Wis., has purchased the plant of the Milwaukee Electric Company at West Allis for $75,000. The plant was erected four years ago and is situated on the tracks of the Chicago, Milwaukee & St. Paul and the Chicago & Northwestern railroads. The new owner will occupy the buildings at once, and plans are now completed for the erection of a large foundry and other buildings to cost from $40,000 to $50,000. The Pressed Steel Tank Company has for the past six months been running two shifts of men and as soon as the new plant is ready will increase its number of employees. The officers of the company are R. H. Hackney, president; G. E. Burnham, vice-president and secretary; E. F. Lansing, treasurer.

The Nebraska Mining & Developing Company, Baxter Springs, Kan., has issued specifications for the building of a new concentrating plant. The buildings will include jig room and hopper, boiler and engine room, coal house, powder house and dressing house, and other work will consist of tramway, ore bins, water tanks, settling tanks and elevators. Bids will be received until January 15 on the above work and also on the machinery required, which will include a 75 horse-power automatic Frost engine, 100 horse-power high pressure boiler, 6 x 4 x 6 inch duplex boiler feed pump, 24 x 48 inch direct pressure water heater, 8 x 8 Freeman geared steam hoister, 14 x 14 foot derrick hoister, 120 16 candle-power light dynamo, 8 horse-power vertical self contained engine, iron pulleys, wood pulleys and belting.

F. E. Pfannmueller & Co., Chicago, have during the month of December made the following shipments among others: One 300 horse-power Wetherill Corliss engine and one 200 horse-power Hamilton Corliss engine to Traverse City, Mich.; one 150 horse-power Ide automatic engine to Spokane, Wash.; one 125 horse-power Atlas automatic engine to Platteville, Wis., and one 175 horse-power Phœnix engine to Algonquin, Ill. Several important deals which are now under consideration are expected to be closed immediately after the first of the year. The company reports the year 1905 an unusually prosperous one in the number of orders received for steam power equipment of every description.

The J. I. Case Threshing Machine Company, Racine, Wis., is erecting a four-story brick addition, 80 x 100 feet, to its plant. The first floor will be used as a punch room for the forge department, the second floor an addition to the separator stock room, the third floor an addition to the

separator erecting department and the fourth floor an addition to the paint department.

The Case Mfg. Company, Columbus, Ohio, has in course of construction an addition to its plant. The crane service is being improved and other enlargements are being made which will double the output of the plant. The company builds cranes and power transmission machinery.

The Robins Conveying Belt Company, New York, has recently opened an office at 749 Railway Exchange Building, Chicago, Ill. C. Kemble Baldwin, the chief engineer of the company, is in charge of this office and is prepared to handle all inquiries from parties located in the Middle West.

Cleveland Machinery Market.

CLEVELAND, OHIO, January 16, 1905.

There have been no indications of even the temporary lull in business usually accompanying the inventory season; in fact, the volume of business has shown no decline for several months. The inventory season and the annual meetings usually held at this time have resulted in a pronounced increase in the number of new tools, which indicates that many additions are in prospect.

The Van Dorn & Dutton Company, manufacturer of gears, is arranging for a large addition to its plant. A two-story building, 75 x 110 feet, will be erected, and gear cutting machinery which will largely increase its output will be installed. Additional power will be provided for by the purchase of a 100 horse-power gas engine.

The Royal Motor Car Company, manufacturer of gasoline automobiles, has just moved into a new factory addition two stories high, 80 x 180 feet, and finds this inadequate, so that it is planning for the erection of another similar building.

The Runyon Concrete Machinery Company has been incorporated with $150,000 capital stock by F. R. Marvin, A. J. Pearsons and William D. McTigue of Cleveland, Clay M. Runyon of Elyria and George W. Coleman of Pittsburgh. The company will manufacture machines for the production of concrete blocks after designs perfected by C. M. Runyon. It is proposed to invest $100,000 in a plant which will be erected either at Elyria or Cleveland.

The McGeorge Mfg. Company has established a shop in the Caxton Power Building, this city, where it will manufacture a line of sensitive drills, making specialties of a 10-inch bench drill and a 14-inch column drill. The company is composed of John, Harold and Ernest McGeorge, all of whom were formerly prominently identified with the Electric Controller & Supply Company. In addition to this business, the gentlemen mentioned will conduct an engineering business under the name of McGeorge & Sons. The shop will also be used for experimental work and for developing new inventions. A number of very fine pieces of machinery have been installed in the shop.

The plant of the American Shipbuilding Company at Bay City, Mich., was damaged by fire a few days ago. J. C. Wallace, president of the company, has just returned to the general offices at Cleveland, after visiting the damaged plant, and states that the newspaper reports greatly exaggerated the damage. The pipe shop was destroyed and the machine shop somewhat damaged, although not seriously. The power plant, boiler shop and docks were not damaged. It is not probable that any great amount of new material will be required for the replacements, which will be made at once. Regarding the reports that important extensions are to be made at the machine shops at Lorain, we are informed that although this work will eventually be taken up it will not be done until the rush of orders now on hand is taken care of, as it is undesirable to disturb the shop organization at the present time.

The Toledo-Massillon Bridge Company, Toledo, which is erecting a large plant, has closed contracts for a goodly number of machine tools, including the following: One 60-inch and two 24-inch punches, one bending machine, ten radial drills, Cleveland Punch & Shear Works Company, Cleveland; one large Detrick & Harvey open side planer, Motch & Merryweather Machine Company, Cleveland; one 24-inch Gray planer, one Greenfield universal grinder, one Ranson floor grinding machine, Strong, Carlisle & Hammond Company, Cleveland; one 16-foot plate planer, one 20-ton 60-foot electric crane, one 30-inch engine lathe, one large milling machine, one 5-foot universal radial drill, one 32-inch drill press, one 800-pound steam hammer, Niles Tool Works, Hamilton, Ohio; one ½-inch double bolt cutter and one 3½-inch single bolt cutter, Acme Machinery Company, Cleveland; one saw grinder, one cold saw, one vertical chord borer, one rotary planer, Newton Machine Tool Works, Philadelphia, Pa.; one turret lathe, Jones & Lamson Machine Company, Springfield, Vt.; one air compressor, Ingersoll-Sergeant Drill Company, New York; one angle shear, Long & Allstatter Company, Hamilton, Ohio; one bulldozer, Williams, White & Co., Moline, Ill. The following tools are under consideration, but the contracts are being held up temporarily: One grinding machine, one 30-inch riveter, one 9-inch riveter, one riveting hammer, one chipping hammer, one air drill, several air hoists, air hose, hose couplings, one 15-ton locomotive derrick, one emery tool grinder, one forging hammer, two hand cranes, chain hoists, one band saw, one saw table, one pattern makers' lathe, one hand planer and joiner, one post boring machine, one bench trimmer, one column trimmer, vises, grindstones, &c. The purchase of 15-ton 40-foot span and 20-ton 60-foot span electric cranes, on which figures were asked for, is being held up indefinitely.

J. C. Smith of Elyria has organized a company at that place for the manufacture of faucets, light brass goods and several patented articles. The company will install 40 automatic machines and other equipment, and will have its own brass foundry. It will commence operations about February 15.

The Twentieth Century Metallic Packing Company, Elyria, Ohio, has been bought out by Harry Davies and others of Cleveland. The plant will remain in Elyria, but a new shop will be opened and considerable new machinery will be installed to increase largely the output of metallic packing.

The Van Buren, Heck & Marvin Company, Findlay, manufacturer of ditching machines, has broken ground for an extensive addition to its plant. The new building will be used as a blacksmith shop and foundry.

The Williams Foundry & Machine Company, Akron, is making improvements to its plant, and is installing a 42-inch lathe and a large planer to be used in the finishing of molds for automobile tires. The production of these molds now forms an important part of its business.

It is announced at Akron that well-known local people will erect a large plant at South Akron for the manufacture of pipe fittings, brass and iron valves, cocks, &c. The company will have a capital stock of $300,000. The names of the parties interested have not yet been disclosed.

The Ajax Mfg. Company, manufacturer of forging machinery, notes a pronounced increase in orders and inquiries from abroad. It is shipping more than its usual run of moderate sized tools, and recently put out several very large machines, including a 6-inch forging machine for the American Car & Foundry Company, 6-inch tool for the Pennsylvania Steel Company and a 4-inch for the Union Pacific Railroad.

The Acme Machinery Company has placed a night shift in several departments, and is working its day force 11 hours. It has few large orders, but a generally increasing demand for tools of all kinds. Foreign business is looking up, particularly with Japan, Germany and England, and it is building a number of tools for these countries.

The Brown Hoisting Machinery Company also notes improvement in the foreign demand. Last week it received contracts for three bridge coal and ore handing outfits for Austria and for a furnace hoist for France; also for a furnace hoist on a domestic order. Its plant is working overtime.

The Cleveland Machine & Mfg. Company is very busy on several orders for rolling mill machinery. It is now occupying a new addition and is planning to put up another next spring.

The White Sewing Machine Company is enjoying an unprecedented business in its automobile department, and has been buying a number of new tools from local dealers. It is the largest maker of steam vehicles in the country, and will produce about 1500 machines this year.

An interest in the Lima Gas Engine Company, Lima, has been acquired by F. J. Marvin, head of the mechanical department of the Capital Gas Engine Company, Indianapolis. Mr. Marvin will have charge of the mechanical end of the business and the facilities of the shop are to be improved.

The Cook Motor Company, Delaware, Ohio, has increased its capital stock, and the new capital will be used in enlarging the plant and installing additional equipment. The company manufactures gas engines.

The Swinehart Tire & Rubber Company, Akron, is erecting a new building, 20 x 170 feet, which will be equipped with machinery for reclaiming rubber by a new mechanical process.

New England Machinery Market.

WORCESTER, MASS., January 17, 1906.

The rush of the machine tool market continues, and all kindred lines share the prosperity, everything that enters into shop and mill equipment being in a condition of demand exceeding the possibility of immediate supply. The dealers are complaining strenuously that unless they are better able to get machinery than they are at present, their volume of business cannot continue, although customers are quite easy to find. Notifications from the manufacturers are received with unwelcome frequency announcing changes of date of delivery, especially of the best selling sizes of different tools. Yet the buyers are realizing that they cannot afford to wait before placing orders even if they can-

not hope to receive their purchases for some months to come.

The foundry situation is going from bad to worse. Inability to get castings is causing serious inconvenience, machine tool builders and makers of other classes of machinery being held up at times when prompt delivery of castings would be a great convenience.

Yesterday President E. M. Woodward of the National Machine Tool Builders' Association sent to the planer builders a tabulated statement of the prices and weights of the various types of planers built by the members of the association. With the statement went a letter asking that if a meeting of the planer section should be thought advisable by the members as a result of the new information, suggestions be made to him as to time and place. The tabulation of weights and prices is intended to give the builders the opportunity to make comparisons between their own and those of the various other makes with a view to a proper readjustment of prices.

The lathe builders have received from Secretary Montanus of the National Association the tabulated statement of prices sent to him by the members of the lathe section of the National Association. It is stated that not all of the members are represented in the statement, but it contains a great deal of valuable information to assist the manufacturers to adjust their prices, to be in greatest possible conformity to those of their competitors, that all may make the most of their business. There will be no meeting as a result of the consideration of this statement, each manufacturer working out the matter of prices for himself, governed by the advance voted at the last meeting of the association.

The L. S. Starrett Company, Athol, Mass., manufacturer of mechanics' tools, is to make important additions to its already large plant, this season, and the plant of the Athol Machine Company, recently acquired by interests identical with the Starrett Company will also be considerably enlarged. Plans are being drawn for a four story brick addition to the Starrett works, to be 50 x 200 feet. The company has just purchased what is known as the Kaufman mill, a three story building 40 x 80 feet, which will probably be occupied by several departments of the Starrett business. This purchase also includes valuable water power, which will be developed for operating the machinery to be placed in the building; and land which will be utilized in the future for the extension of the works, though this will not be needed this year. A large foundry will be erected for the Athol Machine Company, but plans are not completed and nothing can be stated as to the dimensions of the building. The business of both companies has greatly increased during the year, necessitating these extensive improvements.

The Baldwin Chain & Cycle Mfg. Company, Worcester, Mass., manufacturer of chains for transmitting power, has purchased the building at Chandler and Bellevue streets, that city, and will occupy it for manufacturing purposes, giving up the factory on Hermon street. The new building will afford greatly increased facilities for manufacturing. It was formerly operated as a card clothing factory, and was purchased from the American Card Clothing Company.

The Electric Cable Company, 42 Broadway, New York, has been incorporated in Connecticut with capital stock of $500,000, to manufacture various forms of insulated wires and cables, and to put on the market its new insulation named Voltax, which is intended to take the place of rubber covered wire. The officers of the company are: President, Edwin W. Moore; vice-president, F. H. Cowles; treasurer, J. N. Shreve, and secretary, H. S. Williston. The company will establish works at Bridgeport, Conn., where land has been secured at the East End, just east of the plant of the Bridgeport Chain Company. The first building to be erected will be 150 x 250 feet, one story and basement.

A new company known as the Triumph Voting Machine Company is planning to erect a factory at Pittsfield, Mass.

The Charles G. Allen Company, Barre, Mass., iron founder and manufacturer of machine tools and specialties, is building an addition to its foundry building, 50 x 60 feet, to provide room in which to increase this branch of the business. No new equipment will be required for the present.

The L. E. Ford Company, tack manufacturer, Kingston, Mass., has removed its business to the factory recently vacated by Henry M. Jones, who has sold his tack machinery to the United Shoe Machinery Company, Beverly, Mass. The company is in the market for a second hand thread cutting engine lathe, between 5 and 10 inch swing.

The Tubular Rivet & Stud Company, Boston, Mass., is to erect a brick building, 51 x 100 feet and one story, as an addition to its factory at Wollaston, Mass.

A movement is on foot in Massachusetts, headed by Worcester men, to get the legislature to take up the matter of utilizing the undeveloped water power of the State for power purposes. As a matter of fact, this work is being done by private capital with ever increasing rapidity and doubtless the next few years will see all of the best of the water privileges utilized for the development of power, particularly for electric power.

The Eastern Forge Company, 70 Kilby street, Boston, has sold the real estate portion of its plant at Nashua, N. H., reserving the machinery, tools and all other property of the company, and also the right to continue operations at this location for a year to come. The cost of manufacture of coarse, heavy products in iron and steel at Nashua is too heavy to admit of successful competition in an average of years, although during the present period the company is making money. The business comprises a product of from 3000 to 4000 tons per annum of forging details consumed by railroads, locomotive and car builders, engine builders and the makers of the heavier class of machinery. The output runs from $200,000 to $300,000 of manufactured product a year. About 75 hands are employed. The company has not yet settled upon its new location, and would be glad to hear from parties who can offer a location which would be advantageous for the conduct of the business. Plans have been prepared for new construction, and the addition of machinery and tools which would result in more than doubling the output while making a very heavy reduction in the cost of the product. The business of the Eastern Forge Company is a very old one. The plant at Nashua was originally established by the Manufacturers' & Mechanics' Company in 1827, and was practically the parent of the forging industry in this country. The business expanded very rapidly for those days, and reached its maximum under the management of the Nashua Iron & Steel Company, when it comprised five large mills and an open hearth furnace, all at the present location. The Eastern Forge Company purchased the property in April, 1900.

The brass business of Waterbury and the Naugatuck Valley generally is exceedingly prosperous. While no announcements of plans of extensions have been made by the several brass interests, it is confidently expected that important improvements will be made this season to considerably increase the output. The dividends declared by the brass companies disclose that the past year has been unusually profitable. The American Brass Company has declared an extra ½ per cent. dividend, and the Scoville Mfg. Company has declared an extra 2 per cent. dividend, according to a news dispatch.

Young Bros., Barre, Vt., are planning to again enter the business of manufacturing stone work, and will build sheds as soon as the weather will permit, probably in April. They will be in the market for engine and boiler, air compressor, traveling cranes, lathes, polishing machines and other stone working machinery.

The Gilbert Clock Company, Winsted, Conn., will erect a large addition to its plant this spring, which will greatly increase the manufacturing capacity of the factories. The building will be 75 x 100 feet and five stories, affording 37,500 square feet of floor area. A new 200 horse-power engine and generator have been purchased.

The Association of Licensed Automobile Manufacturers has employed Henry Souther, Hartford, Conn., as metallurgist, and will hereafter buy all materials according to specifications.

The Lawrence Gas Company, Lawrence, Mass., is to install two 500-kw. Curtis steam turbines and General Electric generators as an addition to its power plant.

The stockholders of the American Graphophone Company, Bridgeport, Conn., have unanimously voted to increase the capital stock from $4,000,000 to $10,000,000, to increase the par value of the shares from $10 to $100, and to increase the Board of Directors from 15 to 17. The increase of capital is necessary in the development of the business, which has grown with great rapidity. It is generally expected in the trade that the company will continue to be large buyers of machine tools during the current year.

Government Purchases.

WASHINGTON, D. C., January 16, 1906.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until January 30 for a quantity of supplies for the Portsmouth, Boston and New York navy yards, including motors, &c.

The following bids were opened January 9 for supplies for the navy yards:

Bidder 8, Atlantic Works, Incorporated, Philadelphia, Pa.; 14, Becker-Brainard Milling Machine Company, Hyde Park, Mass.; 21, Bertsch & Co., Cambridge City, Ind.; 22, Brown & Sharpe Mfg. Company, Providence, R. I.; 23, Baldwin, Tuthill & Bolton, Grand Rapids, Mich.; 60, W. D. Forbes Company, Hoboken, N. J.; 64, General Electric Company, Schenectady, N. Y.; 66, Garvin Machine Company, New York; 76, Holtzer-Cabot Electric Company, Brookline, Mass.; 77, Hill, Clark & Co., Boston, Mass.; 78, Heney Machine Company, Torrington, Conn.; 95, J. H. Leonard & Co., New York; 107, Manning, Maxwell & Moore, New York; 110, Montgomery & Co., New York; 119, Northern Electrical Mfg. Company, Madison, Wis.; 124, Niles-Bement-Pond Company, New York; 132, Prentiss Tool & Supply Company, New York; 137, Pratt & Whitney Company, Hartford, Conn.; 144, John B. Roach, New York;

146, H. A. Rogers Company, New York; 147, Royce & Ricketts, Washington, D. C.; 168, B. F. Sturtevant Company, Hyde Park, Mass.; 172, Sherman, Brown, Clements Company, New York; 185, R. M. Wilkinson Company, Incorporated, Norfolk, Va.; 192, Buffalo Forge Company, New York; 196, New Jersey Foundry & Machine Company, New York.

Schedule No. 276.

Class 31. One 75 horse-power motor and one 10 horse-power motor—Bidder 64, $2020; 119, $2260.

Schedule No. 281.

Class 101. One electric hoist and runway in building No. 62—Bidder 124, $3350 and $2900; 185, $3000; 196, $3080.

Schedule No. 281.

Class 111. One electric motor driven outfit—Bidder 21, $585; 76, $529.

Class 112. One arbor press—Bidder 77, $118.75; 107, $125; 132, $118.75.

Class 113. One plain milling machine—Bidder 14, $300; 22, $485.75; 66, $389; 78, $452; 107, $495; 124, $410; 132, $478.83; 147, $444.

Class 114. One screw cutting engine lathe—Bidder 66, $460.50; 77, $476; 78, $490; 107, $500; 124, $474; 132, $499.50; 147, $480.

Class 115. One band saw setting and filing machine—Bidder 8, $110; 23, $98.

Class 116. One 14-inch shear and cross cut machine—Bidder 23, $53.

Class 117. One retoother—Bidder 23, $47.

Class 118. One portable hydraulic shaft straightener—Bidder 107, $351; 144, $369; 146, $353.95; 172, $393.70.

Schedule No. 283.

Class 121. One automatic screw machine—Bidder 22, $917.50.

Schedule No. 295.

Class 192. Metal slitting saws—Bidder 95, $97; 110, $99.40; 137, $109.20.

Schedule No. 297.

Class 249. Two forced draft blowers—Bidder 60, $1938; 168, $1257.04; 192, $1427.20.

Under bids opened December 26 for supplies for the navy yards, Niles-Bement-Pond Company, New York, has been awarded class 72, for converting a square shaft 40-ton traveling crane into an electric traveling crane of same capacity at its bid of $4490.

Under bids opened December 5 for supplies for the navy yards, J. A. Fay & Egan Company, New York, has been awarded class 14, one electrically driven band saw, $944, and class 16, one electrically driven self feeding rip saw, $842.

Under opening of November 21 the Lehner Engineering Company, New York, has been awarded class 2, one double cylinder double friction drum hoisting engine, $1421.

Recent Customs Decisions.

Wire Goods.

The Board of United States General Appraisers has overruled a protest filed by F. B. Vandegrift & Co., Philadelphia. The merchandise involved in the suit consisted of metal transfer points and welt hooks made from wire, which the collector of customs has assessed at the rate of $1 per 1000 and 25 per cent. ad valorem, under the provision in the tariff law for "knitting needles." The articles were claimed to be dutiable as articles made from steel wire under paragraph 137, or at 45 per cent. as manufactures of metal. In a special report to the board the appraiser admitted that his advisory classification as knitting needles was an error, and that the merchandise should be returned for duty as manufactures of metal. General Appraiser Fischer, in his opinion written for the customs court, says it seems evident from an examination of the samples that the points and hooks are made from round steel wire, and that therefore the articles are dutiable under paragraph 137, the rate depending on the gauge and value of the wire. "Nowhere in the record," says the General Appraiser, "do we find any information on this point, and the protests fail to indicate under which subdivision of paragraph 137 they claim the goods to be dutiable. They are therefore insufficient under the ruling of Boker *vs.* the United States, and are hereby overruled without an affirmance of the collector's decision."

Bronze Castings.

The Board of General Appraisers has denied a claim made by Hensel, Bruckmann & Lorbacher, New York, regarding the classification under the tariff of a group of bronze statuary with a marble base or seat attached. The bronze part is of cast metal and constitutes the component material of chief value. The group was assessed for duty at 45 per cent. under the provision for manufactures of metal. The importers maintained that the piece should be admitted as "statuary," with duty at 20 per cent. or 15 per cent., under paragraph 454, or under the reciprocity agreement with Italy. Judge Waite in his decision for the board says that the group in controversy cannot be regarded as statuary owing to the fact that it was not wrought by hand.

The importing firm of Harris & Harrington, New York, won an important victory last week before the Board of United States General Appraisers when it was held that the custom house authorities erred in assessing a 60 per cent. duty on imitation bronze clock cases which contain in the lower panel a hand-painted china shield. It appears that the value of the metal cases, exclusive of the shields, is approximately three and a half times greater than that of the china. The importers objected to this assessment, and carried an appeal to the board, which was sustained, alleging that the cases should be deemed manufactures of metal, with duty at the rate of 45 per cent.

Fishing Supplies.

Wilfred Schade & Co., St. Louis, Mo., requested a reduction in the assessment imposed by the collector on fish hooks and porcupine quill floats. Duty was exacted on the fish hooks at the rate of 40 per cent. ad valorem and 1¼ cents per pound and on the floats at the rate of 45 per cent. As the importers failed to offer any evidence in support of their contention it was overruled.

Toy Watches.

General Appraiser Sharretts has decided that A. Hollender & Co., New York, are entitled to import certain watches under the provision for toys at the rate of 35 per cent. The collector's assessment as jewelry, with a duty of 60 per cent., is set aside.

Seamless Tubes.

It has been decided by Judge Somerville that the collector at New Orleans was within his rights in raising the invoice prices of Mannesmann "seamless rolled cylinders." The articles were exported by the Deutsch Oesterreichische Mannesmannrohnen Werke, Duesseldorf, and were entered at New Orleans. The cylinders were of 12½ and 25 kilos capacity. They were entered as possessing a foreign market value of 8.68, 8.89 and 20.89 marks each, and were advanced respectively to 10.10, 12.89 and 23.77 marks each.

Wire Pins.

General Appraiser Fischer has rendered a decision sustaining the contention of the importers that wire pins exported by the Bradford Steel Wire Pin Mfg. Company, Limited, Bradford, England, were correctly invoiced in respect to foreign market prices. Appraiser Whitehead considered that the pins were undervalued and raised prices to a level he deemed equitable. In view of the decision by Mr. Fischer the original invoice prices will form the basis for estimating duties unless the Treasury Department concludes to take an appeal to a board of three general appraisers.

The Monongahela Connecting Railroad at Pittsburgh, owned and operated by the Jones & Laughlin Steel Company, has recently received a consignment of 50 steel cars with a capacity of 200,000 pounds each. The new cars are of a design made under the direction of Frank McCune, general superintendent of that railroad, and will be used for the transportation of pig iron. A special feature is a double trap-door arrangement. There are both outside and inside trap-doors, and when pig iron is being carried the inside doors are put in place and prevent the sagging of the center of the cars which usually results from heavy loading. Under ordinary circumstances the inner doors are folded up against the sides of the car.

HARDWARE

THERE is a good deal of practical wisdom in the remark of a successful merchant: "I used to waste time and energy in fighting competitors, but now I bend all my efforts to finding and taking care of customers." Giving too much attention to rivals in business is an unwise policy. Keeping a jealous eye on their doings and opposing them is, as a rule, unprofitable. Such antagonisms yield no returns. Such a disposition diverts attention from lines of effort which might advantageously be pursued and absorbs energy which might well be exepended in measures which would make for productive and profitable trade. Many a manufacturer, many a merchant, has failed or has achieved only a limited success because he ignored this cardinal principle.

There is probably less occasion for these reflections now than a few years ago. It is more generally recognized that a competitor has a right to exist. Merchants do not expect to have all the business to themselves and are able with more equanimity than of old to witness the success of others in the same field. No manufacturer expects to make all the goods in his chosen line. There is a disposition among both manufacturers and merchants to let others have a share in the business to be done; a greater readiness to attend directly to the taking care of their own trade and the extension of their own interests rather than expending their energy, with not a little mental wear and tear, on opposing or seeking to curtail the operations or limit the success of others; a more genial, a more sensible, a more businesslike spirit animates the trade to-day. To use the phrase of the old merchant, fighting competitors is not as good business as finding and taking care of one's own customers.

The organization of associations has its relation to this principle, both as cause and effect. The influences which made it possible for the organizations to be formed and which led to their formation have manifested themselves in the new spirit which characterizes the trade. Certainly the coming together in associated relationship does much to cultivate the spirit of reasonableness in competition, as it gives the members a broader and more adequate view of the relations in which the various classes of trade stand to one another, while at the same time it promotes acquaintance and fraternal feeling toward those who were unknown or perhaps misjudged before. The associations have thus done much to mitigate the malignity of competition and to make business to be conducted in a less hostile spirit than before. At the same time they have contributed not a little to the enterprise and energy with which business is conducted and to the adoption of up to date methods. Competition has not relaxed, but much of the bitterness of its antagonisms has departed.

It is, however, a significant fact that the righting of wrongs and the correction of abuses was in the early days of the associations one of the prominent reasons for their formation. Manufacturers and jobbers, for example, were complained of as selling to the retailer's customers, and catalogue house competition with its perplexities and difficulties was considered at every convention. These efforts were attended with some success. There is now a good deal less heard than was a few years ago of the interference with the retailer's business by either manufacturers or jobbers, especially in the Western States, where the work of organization is much more complete and effective than in the East. Something has been accomplished by the agitation in regard to the catalogue houses and something still remains to be said and done. There is, however, an evident disposition on the part of the associations to make their conventions more and more educational in their influence, as the programmes for the annual meetings refer largely to practical matters, with a view to making the meetings suggestive as to principles to be followed and methods to be pursued in some of the many departments or details of the business. It is being recognized that the ideal convention is one which bristles with practical suggestions which may be adopted by the members, which points out mistakes into which merchants are apt to fall, which brings to their attention new and better lines on which business can be conducted, which imparts to each in connection with an enjoyable mingling with his fellow merchant a new interest and a new enthusiasm for the business from which he makes his livelihood—a business which he may dignify by the spirit and skill with which it is carried on and the success with which it is crowned. The usefulness of the conventions is certainly to be measured by the extent to which they are practically helpful to the membership, enabling them to be more wise in their methods and more alert and enterprising. The prime duty and the highest wisdom, so far as the sphere of trade is concerned, is for the merchant to make the most of his opportunities and to take care of and upbuild his trade.

Condition of Trade.

There continues to be a steady movement of business in most lines. Manufacturers quite generally have booked more than the usual amount of orders, so that they enter on the year in excellent shape. The general feeling is such and the volume of current business so satisfactory that they have no doubt as to the wisdom of running their factories under full pressure, confident that their products will be readily absorbed by the trade. There are indeed many instances of enlargement of works and preparations for an increased output. With the Iron and Metal market in its present condition and in the presence of the prosperous conditions which prevail the tone which characterizes Hardware prices is decidedly firm. Recent advances are well maintained, and others, often of minor importance and of moderate extent, are announced from day to day. Travelers are resuming their work among the trade and the results of their activities are just beginning to be felt. The growing volume of current business which may be expected during the coming weeks will be an indication of the fruitfulness of their efforts, as well as of the very gratifying conditions which prevail throughout the country. During the next month the conventions of the retail merchants will be regarded with unusual interest, not only because of the growing attendance at these trade gatherings, but because of the presence at them of manufacturers and jobbers in increasing numbers and in many cases with exhibits. In this way the various classes of the trade are very pleasantly and profitably brought together on a business basis.

Chicago.

The volume of the Western Hardware trade has not been perceptibly affected by the price advances so generally made since the advent of the new year. In some lines of course it is too early to predict the effect of higher values, but Western jobbers are generally of the opinion that consumption will not be curtailed on account of the conservatism displayed by the manufacturers in marking up prices. The advance on Sheets was somewhat unexpected, although most of the large distributers and consumers covered future requirements some time ago at the lower prices then prevailing. All of the large distributers have not followed the new advance to the small trade, but have only marked up prices $1, as compared with the manufacturers' advance of $2. Fairly heavy stocks are also reported in the hands of jobbers and dealers, and it will probably be some time before the small consumers feel the full effects of these higher quotations. Notwithstanding the advance in Wire products, demand continued unabated, and heavy contracts are now being closed for Barb Wire and Fencing. Among other advances some revised discounts have been sent out by manufacturers of Picks and Mattocks, although it is not yet general. Building operations already under way augur another big year for Builders' Hardware, and specifications for the new County Building have just been issued, the contracts to be closed on February 5. This is one of the biggest lettings that has come up in some time, and other large buildings are also being figured on. Ideal weather prevails for the sale of Skates, and this promises to be one of the largest Skate seasons in the history of the trade. Inventory still engages the attention of many jobbers and dealers and to some extent interferes with the regular order of trade. The rapid development of the West and Northwest is reflected in the numerous stock orders that jobbers have been receiving during the past three months, and since the first of the year one local jobber has received two orders for entire store equipments.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Stock taking is finished. Salesmen are back on their routes. The work of the old year has been reviewed. Business is opening up well.

January and February last year were exceedingly cold months. The intense cold all over the country, especially in February, brought business almost to a standstill. With normal weather this year salesmen have an opportunity of showing a handsome increase in sales over last year.

In Wall street we have had the interesting spectacle of a bull market on short money. It must be dry in Wall street as all signs seem to fail. Those who write Wall street letters for the benefit of the West in order to sustain their reputation as reliable prophets have been compelled to engage in highly edifying verbal gymnastics. An observer cannot help wondering what grim powers and what forces are working behind the veil. We see the outward manifestations, but the true causes of recent conditions are not yet for the public.

In the meantime the Hardware dealer who sticks closely to his own last, who in buying and selling is governed strictly by his own business, who does not allow his equanimity to be disturbed by the rumble of distant drums will continue to gather moss as he has in the past.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The new year's business has opened up in a very satisfactory manner. Nearly all of our salesmen are now on the road and orders are beginning to come in quite freely. The orders that are being placed by the country merchants this year are fully as large if not larger than usual, they are for liberal quantities and for better assortments and higher class goods.

We anticipate that spring business will be the largest known in the South and everything indicates that 1906 will be a record breaker. Collections continue to be remarkably good.

Cleveland.

THE W. BINGHAM COMPANY.—We think when you went to press after January 4 your ears must have burned from the many encomiums that were recorded in your magazine. They were all true and well deserved. It was truly very gratifying to read the reminiscences of some of the old patriarchs in the Hardware trade, viz., Philip Corbin, William H. Hart, George H. Sargent, E. C. Simmons and others, whose letters were very interesting and instructive, and they appeal especially to the young men that are in the Hardware business and those that are about to embark in same. Many high ideals and grand thoughts were brought out in their letters. May these grand men be spared with health and vigor many more years and may they enjoy the fruits of their splendid labor.

Trade generally in the mining, milling, manufacturers' and the regular line of Hardware is in excellent condition. Large, well assorted orders are coming to us from our salesmen, who are out among our customers fully cocked and primed and with a large stock of goods behind them and prices that are enticing.

We believe that the Hardware trade all over the country is in a flourishing condition at the present time, and, as we have said before, the retail trade had better take advantage of present prices and stock up through their friends, the jobbers, on all lines of goods, for it looks to us as though 1906 is going to be the banner year in the Hardware trade throughout the United States.

The recent advances on Wire and Nails, Tin Plate, Merchant Pipe, Fittings, Sheet Steel, together with other goods in the Hardware line, is stimulating the trade to buy at once and secure a stock of these goods before further advances take place.

Manufacturers on the whole are disposed to be conservative and not to advance prices to a point where they will curtail sales. Despite the advances in metals of all kinds, increased cost of labor and the short hours that labor demands, all of which go to increase the value of manufactured goods, the manufacturers have not put the full advances on their goods that these changes would seem to warrant.

The outlook for trade in all lines of goods is reported to be very propitious, and all that is necessary for manufacturers, jobbers and retailers to do is not to get excited or overload, but keep the market on an even keel, and we will have a splendid trade throughout the year with fair and reasonable profits.

Manufacturers of Wire Cloth and Netting report to us that they are sold up on their products, and it looks as though better prices will be obtained in the near future. We hope so at least, and our advice to those who have not placed their orders is to do so at once.

Steel goods cover a line that is liable to be scarce and orders should be placed in advance of the retailers' wants. The assortment of these goods is so large that they cannot be furnished on the "drop of the hat," and must be ordered in advance to get prompt service.

Although a large majority of the trade have just about finished or just commenced their inventory, it does not seem to have made much difference with collections, as they are very satisfactory.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The first week of the new year sets a pace for the 51 yet to come that will make them hustle to keep in the race. Clearings at every financial center of the Pacific Coast last week showed a heavy percentage of increase over 1905. No section of the United States is stacking up better than California, Oregon and Washington. Portland in 1905 showed 22 per cent. increase over 1904 clearings, and that, too, without any padding, as we have always cleared in coin, carrying forward no large balances to help swell the succeeding day's business.

The Northern Pacific and Great Northern systems are to spend $12,000,000 in this section, building railroads to successfully compete with the Harriman Union Pacific system, while the latter has $20,000,000 of work cut out

for itself in Oregon, hoping thereby to maintain its supremacy in this territory. In material used, men employed and produce bought to maintain these immense armies of men we should reap a rich harvest. The only drawback to this bright future is as to whether Hill and Harriman will be able in the present and future disturbed money market to finance their gigantic schemes. However, railroad building in the Pacific Northwest is only one feature in our development, and whether the roads are completed this year or next our present and future are assured, as our farming, stock, fruit, lumber and mining interests are marching forward with giant strides.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The rather unusual amount of orders being received from salesmen indicates that the Hardware trade is convinced that conditions favor a good spring business and gives every appearance of a rush to cover. Unless all signs fail we shall have one of those seasons when the firm which can guarantee delivery will be sought rather than the one which can give the lowest price.

The open winter we have had in this section has been most favorable to building operations and all sorts of outdoor work. Within the last week our largest department store has begun tearing down and rebuilding a portion of its warehouse, while the Rapid Transit people have started a continuation of their subway on Market street, east of City Hall. It is unusual for operations to begin the first week in January, but thus far there is nothing in the weather conditions to hamper such work.

The high cost of money in Wall Street does not seem to be reflected in the country at large, as collections are better than they were a year ago.

NOTES ON PRICES.

Wire Nails.—An unusually large volume of new business is being received by the mills, considering the season. Liberal contract orders were placed by jobbers before the recent advance for shipment up to March 1, upon which specifications are being received. The market is firm. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—For the season demand is good and prices are fairly well maintained. Quotations on small lots from store are on the basis of $2.10 per keg.

Chicago.—Notwithstanding the large contracts placed by leading distributing interests prior to the last advance, the mills have been in receipt of heavy orders during the past week for jobbers' stocks to meet the spring demand. While the first month of the year is usually quiet, the volume of buying is almost on a par with that of December and greatly exceeds the same period in January a year ago. Prices continue to be firmly maintained, no shading whatever being reported. We quote as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mill.

Pittsburgh.—We note a continued seasonable demand for Wire Nails, much larger than usual at this season of the year and the mills are very busy on contracts on which buyers are specifying quite freely and also on new orders, the volume of which is fairly large. Prior to the recent advance in prices the large trade placed quite liberal orders which were entered by the mills for shipment prior to March 1. It is intimated that a further advance in Wire Nails of 5 or 10 cents per keg may be expected during this month. The market is quite firm and we are advised that official prices are being held. We quote Wire Nails at $1.85 in carloads to the largest jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—Demand is well sustained and continues fairly large despite the season. Mills are in a position to make shipments without any considerable delay, although steel is somewhat scarce. The trade are rather anticipating that an advance in the price of Nails may be made at the next meeting of the Cut Nail Association, which is to be held the last of this month. Quotations are as follows: $1.75, base, for carload lots, f.o.b. Pittsburgh; $1.80 for less than carloads, f.o.b. Pittsburgh; $1.90 for carload lots, on dock, New York; $1.95 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—The local demand is moderate and prices are fairly well maintained. Quotations for small lots from store are on the basis of $1.95 to $2 per keg.

Chicago.—The demand for Cut Nails continues heavy, notwithstanding the season, and prices are well maintained. At the meeting of the association, to be held the last of this month, an advance of $1 a ton is anticipated. We make the following quotations: Steel Cut Nails, in car lots, $1.90 to $1.95; less than car lots, $2; Iron Cut Nails, $2 to $2.05.

Pittsburgh.—It is not unlikely that at the next meeting of the Cut Nail Association, to be held on Wednesday, January 31, an advance in prices may be made to conform to the recent advance in Wire Nails. The fact is referred to that demand for Cut Nails is fairly large and with the high prices of steel and its scarcity higher prices for Cut Nails are fully warranted. Mills report that buyers are specifying quite freely on contracts and that the volume of new business is fairly large. Quotations are as follows: $1.75, base, for carload lots, f.o.b Pittsburgh; $1.80 for less than carloads, f.o.b. Pittsburgh; $1.90 for carload lots, on dock, New York; $1.95 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—Jobbers placed contract orders to a considerable extent previous to the last advance in prices upon which specifications are now being received by the mills. New business is also being booked in fairly large volume. Quotations are as follows, f.o.b Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$2.00	$2.30
Retailers, carload lots	2.05	2.35
Retailers, less than carload lots	2.15	2.45

Chicago.—The mills are now receiving large orders from distributing interests throughout the entire West to meet the spring requirements. The continued open wet weather which has prevailed throughout the West and Southwest, it is feared, will seriously interfere with the distribution of Fencing, &c., the roads, especially in the Southwest, being in a deplorable condition. Quotations continue to be well maintained, as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots, to jobbers, $2.10; Galvanized, $2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—New demand is fairly large and in fact is heavier than usual at this season of the year. The large trade placed quite liberal orders before the recent advance and is specifying on these contracts quite freely. It is intimated that there may be another advance in prices of Wire before this month is out. We quoted Painted Barb Wire at $2 and Galvanized at $2.30 in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—The volume of the spring business in Wire Fencing by the demand upon the mills for prompt shipment of Wire is in the form of specifications on contract orders. These demands are in excess of shipments. New orders are light, as requirements were largely covered earlier in the season. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—Consumption continues unusually heavy and the demands of the independent Fence manufacturers are almost insatiable. Specifications continue in excess of shipments and the mills are constantly behind on their deliveries. Quotations are unchanged, as follows: To jobbers, $1.85 f.o.b. Chicago in car lots, and car lots to retailers, $1.90.

Pittsburgh.—New orders being placed are rather light, but the mills are busy on old contracts, on which specifications are coming forward very freely. Indications point to a very heavy spring trade and demand this month is expected to be larger than last month. There is still complaint by the mills over the shortage of cars and scarcity in supply of Steel, which together are retarding shipments to some extent. Prices are firm and we are advised that official figures are being strongly maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads $1.70
Retailers, carloads 1.75

The above prices are for base numbers, 6 to 9.

Firearms.—The past year has been very satisfactory to Firearms manufacturers as a whole. There are some items, as in all lines, that are not exactly to the liking of those interested, for example, Single Barrel Guns. These are very unsatisfactory on the present basis to manufacturer, jobber and retailer and all owing to friction among the makers. The demand has been greater than any previous year, with the exception possibly of Revolvers and Single Barrel Guns, as compared with 1904, when there was a phenomenal demand, owing to the break in the market. The manufacturers are able to take care of the demand, and although some of the manufacturers have at times been obliged to "back-order," yet all in all the makers are able to more than take care of domestic trade, as well as export business, which is rapidly growing. There are indications that 1906 will be quite satisfactory to the manufacturers in a way, but there is a tendency toward too many makers starting up, who doubtless imagine there is a handsome profit in the manufacture of Firearms. The result evidently will be more goods made than the market will take care of, a condition causing demoralization of prices. This especially applies to cheap Rifles and low priced Double Barrel Hammerless Guns. There are many new patterns of Double Barrel Hammerless Guns on the market for 1906 that will come under the $15 mark. Several makers are also crowding the Belgian and cheap foreign production, and manufacturers of low priced boys' Rifles start up frequently. The Pistol makers find that they are able to turn out nearly twice the amount of goods that the domestic and foreign trade can take, yet a new maker starts up every little while, anticipating a handsome profit, two new ones just having started in, which means that the production is greater than the demand. Three new Repeating Rifles (two of them by new manufacturers), we are advised, are to be placed on the market for 1906. The Repeating Rifle of the United States has been controlled entirely by three makers heretofore. Taken as a whole it is the opinion of some that 1906 will be as satisfactory to Firearms manufacturers as was 1905, which in the main has been as profitable and satisfactory as any they have experienced, and several of the manufacturers have made phenomenal increases in their plant and production.

Wringers.—The American Wringer Company has placed in the hands of the trade a new wholesale price-list, dated January 1, 1906. General advances are announced, amounting to $1 per dozen on Wringers carrying the one-year guarantee, $1.50 on the three-year and $2 on the five-year Wringers. The manufacturers explain that lists have also been readjusted on the larger sizes to make them correspond more exactly with the variations in manufacturing cost. It will be remembered that the last previous change by this company took place about a year ago, but rubber, malleable iron, lumber and all other materials used have continued to advance since that time, necessitating higher prices if the standard of quality is to be maintained during the present year.

Builders' Hardware.—The leading manufacturers of Builders' Hardware have determined to add an additional 10 per cent. to the price on schedule orders received after February 1, 1906. This applies on all orders specially put up and packed for particular buildings, floors, rooms, &c., where the care required in marking and indicating the proper places for the various Locks, Latches, Escutcheons and other articles involves much extra labor and expense. Thoroughly equipped Hardwaremen are capable of doing this work themselves and it is really a part of their business, but for the convenience of architects, builders and contractors it has come to be a custom to indicate the hand of doors and other particulars in regard to Locks, Checks, Transom Lifters, &c., and so on through the line to simplify the proper installation of the numerous articles by the carpenter.

Bells and Gongs.—A meeting of manufacturers of Bells and Gongs was held recently with a view to readjusting prices in consideration of higher costs of raw material, especially Copper. New discounts were agreed upon representing noticeable advances in common Brass Hand Bells, Swiss Hand Bells, Gong House Bells and Trip and Locomotive Gongs. On the two lines last mentioned the advance is understood to be about 10 per cent. On Hand Bells it is somewhat larger.

The Wire Goods Company.—The Wire Goods Company, Worcester, Mass., has just issued Discount Sheet No. 24, applying to its catalogue No. 5, January, 1903. It gives discounts on the extensive line of Wire Goods manufactured by the company and also lists and illustrates several of the company's Coat and Hat Hooks, Spring Cotters and Flat Spring Keys, Iron and Brass Wood Screws, Dog Chains, Elastic Steel Door Mats, &c.

Rope.—Manufacturers report that demand is exceedingly good for the season. Some of the mills are working on contract orders, but most of the contracts have expired. The market is fairly well maintained and quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality Sisal, 8 cents per pound.

Window Glass.—At the meeting of window glass manufacturers, which was scheduled for last week, there was a representation of over 1800 pots capacity. It is understood that over 1600 pots agreed to join an organization for the betterment of conditions in the Glass business. A committee was appointed to arrange a plan of organization to be submitted to a meeting to be called in the near future. It is reported that the plan under consideration is similar to that which was used by the old Independent Glass Company. The United States Window Glass Association, it is said, will act as a holding company through which all sales are to be made, and according to the present plan, each member of the association is to put up a forfeit of $300 per pot as a guarantee of good faith. The wage committee of the Amalgamated Window Glass Workers' Association, members of which are manning the majority of the glass factories, refused to consider a revision of the flat wage scale or to adopt a sliding scale unless manufacturers could form an association including at least 1800 pots. This ultimatum on the part of the workers is considered a serious obstacle in the way of completing the plans of new organization, as it is doubtful whether some of the co-operative and perhaps other Glass manufacturers can be induced to join. Should the organization prove successful in obtaining the required number of pots, the workers propose to adopt a sliding scale of wages, based upon the actual price for which Glass is sold. The outcome of the project will be awaited with interest by the trade.

Linseed Oil.—A further advance in the price of Oil has taken place, owing to the strong and advancing position of the Seed market. Crushers are firm in maintaining the advance and the market at present is a strong

one. There has been an unusually large quantity of Oil contracted for at prices ranging from 35 to 40 cents per gallon, the larger proportion having been contracted for below 40 cents. Buyers will of course be able to put this on the market at lower prices than those now ruling. As for the crushers, it is a question whether they will be willing to manufacture and store Oil for the next two and one-half or three months, until spring demand begins. Some in the trade look for a break in the market before that time, but this is of value only as individual opinion. In the present strong condition of the market it would not be surprising if prices sooner or later went to a higher figure. Quotations are as follows: Out of town Raw, 42 to 43 cents; City Raw, 44 and 45 cents per gallon; Raw, Calcutta seed, 65 cents per gallon. Boiled Oil, 1 to 2 cents advance over Raw.

Spirits Turpentine.—Prices have advanced about 1½ cents per gallon during the week under review, while local demand has been of a hand to mouth character. New York quotations are as follows, according to quantity: Oil Barrels, 68 to 68½ cents; Machine Made Barrels, 68½ to 69 cents per gallon

NEW ENGLAND IRON AND HARDWARE ASSOCIATION.

CLERK JOHN T. BOYD, chairman of the Committee of Arrangement, announces that the annual dinner of the New England Iron and Hardware Association will be held at Hotel Vendome, Boston, on Tuesday, January 23, at 6.30 p. m., with a reception at 6 p. m., as formerly. The committee is making every effort to have a thoroughly enjoyable and successful dinner and the co-operation of members is requested. Stockholders and associate members are privileged to invite as many guests as they desire to the dinner, the cost of which, $6 per plate, will be paid by subscription, as in the past. Congressman William Alden Smith of Michigan, Col. H. P. Bope, vice-president of the Carnegie Steel Company and Rev. Willard Scott of Worcester, Mass., are among those who have promised to attend and make addresses.

PHILADELPHIA HARDWARE MERCHANTS AND MANUFACTURERS' ASSOCIATION.

THE annual meeting of the Hardware Merchants and Manufacturers' Association of Philadelphia was held Tuesday, January 16. After the transaction of routine business the election of officers for the ensuing year was held, resulting in the following selection: President, John R. Griffith of Shields & Brother; vice-president, E. S. Jackson of the Miller Lock Company; secretary-treasurer, T. James Fernley; Board of Directors—William W. Supplee, Samuel Disston, Thomas Devlin, John R. Griffith, E. S. Jackson, Charles Z. Tryon, James H. Ritter, Ellcott Fisher and T. James Fernley.

The annual banquet of the association is to be held at the Bellevue-Stratford Hotel, Tuesday evening, January 30, and promises to be the largest in point of attendance that has ever been held. E. S. Jackson, Joseph J. McCaffrey, J. H. Ritter, Charles Z. Tryon and T. James Fernley are the committee in charge.

W. C. HELLER & CO.'S NAIL BINS.

A NEW Nail Bin is being put on the market by W. C. Heller & Co., Montclair, N. J., manufacturers of Steel Shelf Boxes, &c. It is 54 inches high and occupies only four square feet of floor space, although it will hold 20 full kegs of Nails. The article consists of four sections, each composed of five bins. These sections revolve about an upright spindle, having ball bearings so that they will turn easily even when loaded. The construction is entirely of metal and the weight of the bin packed for shipment is 300 pounds.

A MAJORITY of the stock held by the stockholders of the Hockaday Hardware Company, Wichita, Kan., has been transferred to E. C. Simmons of the Simmons Hardware Company, St. Louis. The old officers and board of directors of the Hockaday Company have resigned and a new board of directors have been elected. The name of the company will remain the same as before for the present and the business will be conducted in every way as heretofore. The new board of directors is as follows: E. C. Simmons, W. D. Simmons, F. E. Allyn, Harry F. Gee, and F. W. Martin. F. E. Allyn has been chosen manager and will have as his assistant Harry F. Gee. The Hockaday Company is capitalized at $250,000, divided into 500 shares with a par value of $500 each. Of the total number of shares, 444 were transferred.

CONVENTION NOTES.

New England Retail Hardware Association.

Plans for the 1906 convention of the New England Retail Hardware Association, to be held at Hotel Vendome, Boston, March 1 and 2, were discussed at a meeting of the Executive Committee, January 9. Charles E. Adams, Lowell, presided in the absence of President John B. Hunter. An advance bulletin will be published by a committee of the Executive Committee about February 1, containing valuable editorial matter, convention programme and advertisements. The invited guests of the convention include: President W. P. Bogardus and Secretary M. L. Corey of the National Retail Hardware Association; T. James Fernley, secretary-treasurer of the National Hardware Association; R. R. Williams, Hardware Editor of *The Iron Age;* Philip Corbin, president of the American Hardware Corporation, New Britain, Conn.; Henry R. Towne, president of the Yale & Towne Mfg. Company, Stamford, Conn.; Howard S. Hart, president of the Russell & Erwin Mfg. Company, New Britain; J. B. Sargent, Sargent & Co., New Haven, Conn.; William H. Hart, president of the Stanley Works, New Britain; Henry L. Lockwood, president Lockwood Mfg. Company, South Norwalk, Conn.; M. Harbster, president Reading Hardware Company, Reading, Pa.; Gov. Curtis Guild, Jr. of Massachusetts, and Mayor Fitzgerald of Boston. The programme will include a general business meeting, "stag" supper, theatre party, trip about local Hardware stores, automobile party about Boston and suburbs, and annual ladies' night. Seven large rooms have been secured at the Vendome for exhibits and all will be filled. At the Executive Committee meeting seven applicants for membership were admitted.

New York Retail Association.

The officers of the New York State Association of Retail Hardware Dealers are moving energetically to make the annual convention at Binghamton, February 20-22, the most interesting and instructive yet held by the association. It is intended to make the Question Box more of a feature of the meeting than formerly, and in this connection an exchange of ideas in regard to the retail merchant's advertising is proposed. The retail Hardwaremen of the State are accordingly invited to favor the association with specimens of their newspaper ads., booklets, catalogues, circulars, &c., which will be put into convenient shape for the members to look over at the meeting. This advertising matter, together with questions for the Question Box, may be sent to any of the members of the committee in charge—namely, L. G. Mattison, Newark; William Fowler, White Plains, and Irving Van Voorhis, Cobleskill.

Ohio Hardware Association.

As an evidence of the interest taken by the members in the approaching annual meeting at Canton Frank A. Bare, secretary of the Ohio Hardware Association, states that he is receiving a great many letters from them, giving names of nonmembers in their towns or vicinity and intimating that they have brought the meeting to their notice and urged their attendance. Many of the members show an admirable spirit in volunteering to do anything they can to contribute to the success of the gathering. Traveling salesmen as usual are giving enthusiastic and effective support. Nearly all of the exhibit space in the

Auditorium Building has been taken, many concerns who have not heretofore given attention of this sort to Hardware association meetings having made preparations for displays.

COMING RETAIL HARDWARE CONVENTIONS

The following conventions of Retail Hardware Associations will be held during January, February and March:

TEXAS RETAIL HARDWARE AND IMPLEMENT ASSOCIATION:
Sixth Annual Meeting at Dallas, January 23, 24 and 25. President S. L. Erwin, Honey Grove; secretary, J. W. McManus, Waxahachie.

NORTH DAKOTA RETAIL HARDWARE ASSOCIATION:
Ninth Annual Meeting at Grand Forks, January 30 and 31. President, H. F. Emery, Fargo; secretary, C. N. Barnes, Grand Forks.

COLORADO RETAIL HARDWARE ASSOCIATION:
Fourth Annual Meeting at Denver, February 7 and 8. Headquarters, Adams Hotel. President, A. B. Meservey, Colorado Springs; secretary, Davis Barkley, Fort Collins.

WISCONSIN RETAIL HARDWARE ASSOCIATION:
Tenth Annual Meeting at Milwaukee, February 7 and 8. Headquarters and Exhibits at West Side Turn Hall. Membership, 530, an increase of 75 since last meeting. President, Ralph Burtis, Oshkosh; secretary, C. A. Peck, Berlin.

PENNSYLVANIA RETAIL HARDWARE ASSOCIATION:
Fifth Annual Meeting at Williamsport, February 7, 8 and 9. President, George V. Thompson, Mt. Jewett; secretary, J. E. Digby, McKee's Rocks.

INDIANA RETAIL HARDWARE ASSOCIATION:
Seventh Annual Meeting at Indianapolis, February 13, 14 and 15. Headquarters and Exhibits at Tomlinson Hall. President, A. N. Shidler, South Bend; secretary, M. L. Corey, Argos.

NEBRASKA RETAIL HARDWARE ASSOCIATION:
Fifth Annual Meeting at Lincoln, February 13, 14 and 15. President, Max Uhlig, Holdrege; secretary, Frank K. Barr, Lincoln.

IOWA RETAIL HARDWARE ASSOCIATION:
Eight Annual Meeting at Des Moines, February 14, 15 and 16. Headquarters and Exhibits at Bush Block. President, H. S. Vincent, Fort Dodge; secretary, A. R. Sale, Mason City.

MISSOURI RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:
Eighth Annual Meeting at Hannibal, February 20 and 21. President, Taylor Frier, Louisiana; secretary, Fred. Neudorff, St. Joseph.

ILLINOIS RETAIL HARDWARE ASSOCIATION:
Eighth Annual Meeting at Chicago, February 20, 21 and 22. Headquarters and Exhibits at First Regiment Armory. President, Frank B. McKenney, Rockford; secretary, L. D. Nash, Elgin.

KENTUCKY RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:
Sixth Annual Meeting at Louisville, February 20, 21 and 22. Headquarters and Exhibits at Galt House. President, J. C. Frederick, Owensboro; secretary, John R. Sower, Frankfort.

NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS:
Fourth Annual Meeting at Binghampton, February 20, 21 and 22. President, C. P. Sherwood, White Plains; secretary, J. B. Foley, Syracuse.

CONNECTICUT RETAIL HARDWARE ASSOCIATION:
Third Annual Meeting at New Haven, February 27 and 28. Membership, 65, about two-thirds of the Hardware Merchants of the State. President, Chas. G. Agard, Torrington; secretary, James De F. Phelps, Windsor Locks.

OHIO HARDWARE ASSOCIATION:
Twelfth Annual Meeting at Canton, February 27 and 28 and March 1. Headquarters and Exhibits at Auditorium Building. President, John F. Baker, Dayton; secretary, Frank A. Bare, Mansfield.

MINNESOTA RETAIL HARDWARE ASSOCIATION:
Tenth Annual Meeting at Minneapolis, Febraury 28, March 1 and 2. Headquarters at Nicollet House. President, A. T. Stebbins, Rochester; secretary, M. S. Mathews, Boston Block, Minneapolis.

NEW ENGLAND RETAIL HARDWARE ASSOCIATION:
Thirteenth Annual Meeting at Boston, March 1 and 2. Headquarters and Exhibits at Hotel Vendome. President, J. B. Hunter, Boston; secretary, F. Alexander Chandler, 36 Federal street, Boston.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION:
Fifth Annual Meeting in March at San Francisco. President, H. C. Bennett, San Francisco; secretary, Henry Gracey, 235 Powell street, San Francisco.

NATIONAL RETAIL HARDWARE ASSOCIATION:
Annual Meeting at Chicago in March. President, W. P. Bogardus, Mt. Vernon, Ohio; secretary, M. L. Corey, Argos, Ind.

W. R. GRACE & CO.'S WEST COAST STEAMSHIP LINE.

W. R. GRACE & CO., Hanover Square, New York, large exporters of American products of all kinds and importers of raw materials from South America, have ordered a new steamship to supplement the large capacity of their present regular line to west coast South American ports. The new steamer will be built at Sunderland, England, as the others were, by Armstrong, Whitworth & Co., and is to be ready in October of this year. The vessel will be similar to the Celia, same line, of about 8000 tons dead weight capacity. The other steamers of the line, five of which were built expressly for it about 10 years ago, are Condor, Capac, Coya, Cacique, Curzo, Cumbal and Celia. They run regularly from New York to the most important ports, sixteen in all, from Punta Arenas in the straits of Magellan to Guayaquil in Ecuador, and have a cargo capacity of from about 4500 to 8000 tons each, dead weight. Outward bound general cargo is carried, much similar in character to that shipped to such countries as the Argentine Republic and Australia, a large proportion being manufactures of metals and kindred goods. The return cargoes are largely nitrate of soda, ores, sugar and some wool and hides. It is a matter for congratulation that the line shows such steady increase, both in the number of ships and their capacity.

On Friday evening, January 5, occurred the second annual banquet tendered by the Whitman & Barnes Mfg. Company, Chicago, to the foremen in the various departments of their West Pullman, Ill., factory. All the foremen, 19 in number, were present, together with the factory manager, A. D. Armitage, and the superintendent, D. M. Motherwell. A most enjoyable evening was spent and plans for increasing the capacity and new methods of handling work were discussed freely. The banquet was held at the Vendome Hotel, Chicago.

E. B. Chase, Skowhegan, Maine, has purchased the interest of J. Wallace Blunt in the Blunt Hardware Company. The name of the company will not be changed. Mr. Chase has been connected with the Blunt business for a number of years.

The Muskogee Hardware Company, Muskogee, Ind. Ter., and the Muskogee Furniture Company have consolidated, being incorporated under the latter title. The Hardware department, however, is still run under the old style.

The James Trilling Hardware Company, Sheboygan, Wis., has recently increased its capital stock from $10,000 to $25,000.

HARDWARE CLUB MEMBERS IN OFFICIAL POSITIONS.

AMONG the recent appointments to important positions in the State and municipal governments are four members of the Hardware Club, who have been identified with it from the first. Edward S. Clinch, brother of A. D. Clinch, was nominated by Governor Higgins to succeed Judge George C. Barrett, on the Supreme Court bench in the first department, to serve until January 1, 1907. Mr. Clinch is also a member of the Bar Association, Quill Club, Municipal Art Society, American Museum of Natural History and president and director of the A. T. Robinson Company and Cragin Mfg. Company, and a director of the North American Realty Company.

The other three appointees are in the municipal service, chosen by Mayor McClellan. James H. Kennedy, who has been made one of the Board of Assessors, is well and very favorably known to the Hardware trade. He was a former member of the Board of Governors of the Hardware Club and for three years its secretary. Mr. Kennedy was for a long time editor of *Hardware* and for several years has been the editor of the *Hardware Dealers' Magazine*, a position he yet holds.

Another member of the club, Charles Putzel, a well known lawyer, has been appointed one of the Commissioners of Taxes and Assessments for Greater New York. Mr. Putzel graduated from the College of the City of New York in 1876 and from the Columbia College Law School in 1878, since which time he has practiced law. He is the author of two law books, organized the New York Cremation Society and the United States Crematory Company, was chairman of the School Board 1892-97, and trustee and secretary of the Board of the College of the City of New York July 1, 1900, to January, 1, 1906.

Another appointment is that of Lee Kohns, one of the firm of L. Straus & Sons, 42 Warren street, New York, importers of china, glass, crockery, &c. Mr. Kohns has been appointed by the Mayor a trustee of the College of the City of New York, of which he is a graduate. He is also a director of the New York National Exchange Bank and was until lately president of the Crockery Board of Trade in this city.

KNAPP & SPENCER COMPANY'S WANT BOOK.

KNAPP & SPENCER COMPANY, Sioux City, Iowa has just distributed its seventh annual want book, about 6 x 9 inches in size. The company remarks that it will not publish any special catalogues this spring, as it expects to get out regularly supplementary pages of additions and corrections for insertion in its loose leaf catalogue, thus keeping it up to date. At the top of each of the pages intended for the merchant's memoranda are catch phrases, some of which it is suggested may be used to advantage by the retailer in his local advertising. Others are of a stimulating character and urge energy and enterprise on the part of the merchant. Following are a few examples:

The only sure way of getting your share of business is to get out and hustle for it.

The man who rises rapidly is the man who constantly and thoughtfully undertakes new things.

Neglect toward a customer is a business crime.

Hospitality is a part of this store's business.

The company also offers the services of its advertising man to merchants who desire help in this direction.

OF interest to the Canadian trade is the information that the Whitman & Barnes Mfg. Company, Chicago, Ill., is manufacturing at its St. Catharines, Ontario, plant all sizes of the W. & B. Machinists' Knife Handle Wrenches, W. & B. Regular Wrenches and also the complete line of Bulldog and Always Ready Wrenches. It is stated that the highest quality will be maintained in all these goods and that orders sent to St. Catharines will receive prompt attention.

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CHICAGO HARDWARE MARKET IN 1905.

NOTWITHSTANDING the midsummer lull the Western Hardware trade in 1905 chronicles the manufacture and movement of a record volume of business at prices which show increased profits over the preceding year. The era of prosperity, which set in with the advent of the fall months, bids fair to continue well through the ensuing year, and on account of the marked increases in the value of raw materials higher prices on commodities generally will prevail. Although the spring trade did not reach previous high levels it was generally satisfactory, and the declining tendency of the iron and steel market during the summer months was reflected in the Hardware trade. Crop estimates in August, which indicated a total beyond the wildest predictions of the most sanguine, started a buying movement which in volume and duration has never before been equaled. The filling in orders for all kinds of Harvesting Tools, which were placed with the jobbers during the closing summer months, were mute indications of the record crop harvested and the prosperity tidal wave now sweeping over the country was then set in motion.

Demand for Builders' Hardware was heavy throughout the entire year on account of the extensive building operations carried on in the West and Northwest, and building permits for structures representing an aggregate cost of $62,500,000 were issued in Chicago alone. When the building season was at its hight manufacturers began to fall behind on deliveries, and in September shipments on new orders could not be promised in less than three months. Notwithstanding the heavy demand prices show a low average for the entire year and there were no indications of increased strength until November, when the advances in copper and other metals increased the cost of manufacture to such an extent that concessions were no longer profitable. Jobbers generally reported increasing sales of high grade goods and there was a proportionate falling off in the demand for cheap finishings. With metals on their present basis higher values, especially for solid bronzes, are sure to prevail early in the year, although as yet no changes have been noted. The demand for Stoves and accessories on account of the general prosperity which prevailed throughout the West in the last half of the year exceeded all previous records and building operations also largely influenced the movement of heating appliances. Manufacturers' profits were only fair on account of the low prices which prevailed and no advance was made until December, when the increased cost of all materials entering into Stove manufacture made higher prices absolutely necessary.

The sensational advances in metals resulted in the marking up of all classes of Copper, Bronze and Brass commodities during the last quarter. The excessive production of Enameled Ware held values on a low basis, and Stamped Ware, in spite of the big demand, remained practically unchanged in price on account of the low prices which prevailed on Sheets and Tin Plate. On account of the heavy rains in the spring and summer months the sale of Lawn Mowers broke all records, while the demand for Garden Hose was proportionately light. The demand for Tools for harvesting the corn crop was unprecedented and jobbers' and dealers' stocks were depleted before the harvesting season was at an end. The activity of the Vehicle and Implement plants during the fall months resulted in heavy buying of all lines of Heavy Hardware and the scarcity of Wood stock, coupled with the heavy demand, caused sharp price advances. The withdrawal of cars from the general trade for the movement of the heavy crops seriously interfered with the shipment of material the latter part of the year.

The average quotations on Wire Nails and Wire products show a decline as compared with the preceding five years. The heavy orders placed in the closing months of 1904 resulted in the resumption of the mills the first of the year and an advance of $1 a ton was made in February. Prices were maintained on this basis until the month of August, when a reduction of $2 a ton was quietly put into effect. This resulted in the placing of heavy orders for the fall trade, and prices were restored by advances which were made the latter part of September and early in October of $1 a ton each. Orders closed by the mills during the month of October exceeded the tonnage placed in any previous month in the history of the trade, and the continued open weather which prevailed practically until the close of the year was favorable to continued heavy buying and market conditions generally were better than they had been at any time in the preceding twelve months. Cut Nail prices also show an average lower than the preceding five years and during the summer months sales were made on the basis of $1.60, Pittsburgh. The increased cost of ra wmaterial necessitated advances during the last quarter and the year closed with prices practically on the same basis as during the month of January.

Chicago Wire Nail Prices.

The course of prices of carload lots at Chicago during 1905 and for several years preceding is shown in the following table, the monthly prices being averaged from weekly quotations in our market reports:

Months.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
January	$1.90	$2.04	$2.08	$2.16	$2.35	$3 53	$1.59	$1.55
February	1.95	2.05	2.12½	2.20	2.45	3.53	1.73	1.57
March	1.95	2.09	2.20	2.20	2.45	3.53	2.09	1.55
April	1.95	2.10	2.15	2.20	2.45	3.28	2.25	1.47
May	1.95	2.10	2.15	2.20	2.45	2.53	2.35	1.45
June	1.95	2.07	2.15	2.20	2.45	2.48	2.60	1.43
July	1.95	2.05	2.15	2.20	2.45	2.43	2.70	1.36
August	1.87	1.90	2.15	2.20	2.45	2.43	2.80	1.36
September	1.87½	1.75	2.15	2.15	2.45	2.35	3.10	1.45
October	1.95	1.75	2.15	2.05	2.42½	2.35	3.20	1.47½
November	1.95	1.77	2.15	2.00	2.35	2.35	3.28	1.40
December	1.95	1.88	2.00	2.00	2.25	2.35	3.53	1.37½
Aver. for year	$1.93¼	$1.97	$2 13	$2.14½	$2.41	$2.76	$2.60	$1.45

Chicago Cut Nail Prices, 1905.

The following are the Chicago prices for Cut Nails, in car lots, during the year:

January	$1.90	July	$1.80
February	1.95	August	1.74
March	1.91	September	1.75
April	1.85	October	1.77½
May	1.85	November	1.85
June	1.81	December	1.88¾

Average for 1905, $1.84; 1904, $1.84½; 1903, $2.33; 1902, $2.25; 1901, $2.34; 1900, $2.48.

Chicago Barb Wire Prices.

The course of prices of Galvanized Barb Wire, in carload lots, Chicago delivery or equal, has been as follows in 1905 and several years preceding, our weekly quotations being averaged:

Months.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
January	$2.35	$2.64	$2.68	$3.01	$2.95	$4.13	$2.05	$1.90
February	2.40	2.65	2.75	3.10	3.05	4.13	2.25	1.90
March	2.40	2.69	2.80	3.10	3.05	4.13	2.62½	1.90
April	2.40	2.70	2.77	3.10	3.05	3.88	2.80	1.87½
May	2.40	2.70	2.75	3.10	3.05	3.13	2.95	1.80
June	2.40	2.68	2.75	3.10	3.05	3.13	3.20	1.80
July	2.40	2.65	2.75	3.06	3.05	3.10	3.30	1.80
August	2.32	2.42½	2.75	3.00	3.05	3.10	3.40	1.80
September	2.32½	2.20	2.75	3.00	3.05	3.00	3.67½	1.80
October	2.40	2.20	2.75	2.68	3.05	3.00	3.77½	1.82½
November	2.40	2.22½	2.75	2.60	3.05	3.00	3.88	1.82½
December	2.40	2.33	2.60	2.60	3.00	3.00	4.13	1.82½
Aver. for year	$2.38¼	$2.51	$2.74	$2.93	$3.04	$3.39	$3.17	$1.85

CALENDARS, &c.

ASHTON VALVE COMPANY, Boston, Mass.: Hanger calendar with monthly sheets. The company makes a charge of 15 cents on each calendar sent on request to cover partly the cost of the calendar and postage.

THE OSBORN MFG. COMPANY, Cleveland, Ohio: Perpetual desk calendar. Parties desiring additional copies can obtain them at 50 cents each as long as the supply lasts.

L. S. WINNE & Co., wholesale and retail Hardware merchants, Kingston, N. Y.: Desk calendar, with weekly sheets.

BRUCE & COOK, dealers in Metals, 186-190 Water street, New York: Hanger calendar for 1906.

F. E. MYERS & BRO., Ashland, Ohio: Large hanger illustrating their line of Pumps and Hay Tools, with calendar sheets in center.

BŒBINGER HARDWARE COMPANY, Cincinnati, Ohio, Hanger calendar with monthly sheets.

STERLING EMERY WHEEL MFG. COMPANY, Tiffin, Ohio: Hanger calendar with monthly slips.

WYOMING SHOVEL WORKS, Wyoming, Pa.: Calendar with good sized weekly memoranda sheets.

C. J. RUMSEY & Co., wholesale and retail Hardware, Ithaca, N. Y.: Hanger calendar, with monthly sheets.

CANADA'S PROSPERITY.

THE general business prosperity of Canada is nowhere more apparent than in the Hardware trade. From every quarter come reports of active business. Never before at this season of the year has there been as general a demand for all kinds of Hardware.

Canada is primarily an agricultural nation. The plowshare and the pruning hook are still the best symbols of Canada's present and future. And the resources of this great country are sufficient to give Canada the balance of power in supplying the markets of the Old World.

The Largest Wheat Crop

in the history of the Dominion has been harvested and marketed, bringing into the country some $100,000,000. The dairy and poultry products nearly equal this amount. All garden and farm crops have been good and sold at top prices. It is therefore little wonder that the farmers have money and are paying off mortgages, enlarging buildings and buying supplies.

No less active has been the mining development. Many good and rich mines have been opened during the year, and the higher prices of metals have brought a number of old properties again into the active list.

Much new railroad work is in evidence. In the towns and cities all through the Dominion the building trade is exceeding active. Everywhere labor is well employed and at a higher scale of wages.

One of the Best Evidences

of the country's prosperity is seen in the city of Toronto. Phoenix-like have new and better structures of stone and steel risen from the ashes of the great fire.

Canada's great West is fast being settled, and the remarkable growth of Winnipeg—now a city of 125,000 population, the Chicago of Canada—speaks well of the prosperity of the West.

The Manufacturing Side.

But although Canada is and probably for many years to come will be an agricultural nation, still she is making rapid strides forward in manufacturing. Low priced power, cheap labor and favorable tariff regulations are building up much manufacturing here, which in some lines of Hardware is completely blocking the home markets to American and German manufacturers.

Hamilton has become in a few years' time the center of the Farm Implement trade of Canada, and with the markets of the other British colonies being opened by favorable customs duties to Canadian products Hamilton may in a few years become the great Farm Implement center of the world, and Canadian made Reapers and Harvesters will follow the British flag around the globe.

American Hardware Holding Its Lead.

It is a remarkable fact and one worthy of note that although the preferential tariff favoring English Hardware by a reduction of 33 1-3 per cent. from that imposed on like goods coming from the United States has been in full force this year, still the imports of American Hardware and tools are maintaining their lead over those from England, proving the fact that the American styles and patterns are what the people want and the nearness of the market practically controls the trade. E. D. I.

M. G. RODEARMEL, manufacturers' agent, Commercial Building, Minneapolis, Minn., has issued a neat booklet in which the names of the manufacturers represented by him and their principal products are enumerated, space for memoranda being also provided. Among the manufacturers thus represented in the States of Minnesota, North and South Dakota, Iowa, Nebraska, Missouri and Kansas are Stover Mfg. Company, Schreiber & Conchar Mfg. Company, Chapin-Stephens Company, American Tube & Stamping Company, Dana Mfg. Company, Animal Trap Company, Hall & Carpenter, Goodell Company and many others.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Hardware Association Programme Advertising.

From a Prominent Manufacturer: The Hardware dealers' associations of the United States are becoming numerous. This is a good sign of the times, as it means much improvement in the condition of the retail Hardware dealer on account of the education that he will receive in the way of doing business by coming into contact with his brother dealer. A few years ago, when these associations were young and few and far between, with small memberships, they had to struggle to meet their expenses, and in order to help themselves along they began the issuing of programmes of their meetings, selling advertising space in same to manufacturers at an average of about $25 per page.

But as the associations have grown larger numerically and strong enough to take care of their own expenses they have not ceased publishing these programmes, and as there has been a large increase in the number of associations the combined demand on the pocketbook of the manufacturer whose advertising they solicit has become a burden. There are now some 15 or more States which are organized and whose secretaries publish these programmes. Every year sees an increase, and in the course of a few years the probabilities are that the entire 48 States and Territories will have their Hardware organizations, and if they all call on the manufacturer for an advertisement at $25 per page it will cost him $1200 for such advertising.

You can readily see, therefore, what a growing evil this advertising proposition is. The American Federation of Labor at Pittsburgh a short time since agreed in open meeting that the demands of their various branches on manufacturers and others for advertising in their programmes, &c., had grown to be a bad thing, and they voted to cut it out. Now if the labor organizations can afford to do this, how about the Hardware merchants? The advertisement in itself does the advertiser very little if any good, because such advertisements are very seldom if ever given any attention, and even when they are the cases are very rare when they influence any business. Consequently it is a case of graft, pure and simple, and ought to be done away with.

On top of the programme now comes the renting of space in halls for exhibits. This latter, of course, is legitimate, but it simply increases the expense and makes it a greater burden to get a share of the dealer's trade. The exhibit proposition is a great deal more legitimate than the advertising graft, and the latter ought to be cut out.

WARWOOD TOOL COMPANY.

THE WARWOOD TOOL COMPANY, Wheeling, W. Va., manufacturer of Picks, Mattocks, Grub and Hazel Hoes, Coal Miners' Tools, Crow Bars, Wedges, Sledges, &c., is distributing a very handsome booklet containing illustrations and descriptions of its new plant. Thirty-two thousand square feet are now occupied, and the company owns real estate sufficient to increase to four or five times its present size. There is a private water plant of ample capacity, with natural gas for heating, tempering and power. All buildings are of steel and iron and cement construction and designed to be fire proof. The power house is equipped with three Westinghouse gas engines belted to alternating current generators of the latest Westinghouse pattern.

PHILIP J. FORBES and FRANK C. HUTCHINSON, formerly manager and superintendent respectively of the De Haven Mfg. Company, Brooklyn, N. Y., have resigned and are now engaged in manufacturing a line of Shipping Department Specialties at 18 and 20 Henry street, Brooklyn.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

AMERICAN FILE RENEWING COMPANY, Providence, R. I.: Printed matter calling attention to what the company is able to do with old or worn Files and giving testimonials from well-known concerns expressing their satisfaction with work done in this direction.

THE SESSIONS CLOCK COMPANY, Forestville, Conn.: Folder devoted to the company's "Dutch" Hall Clocks, finished in dark mission oak, with raised brass figures, brass minute dots and colored glass in door and dial board. The Clocks are offered in Holland, Antwerp, Denmark and Amsterdam designs.

LANCASTER MACHINE & KNIFE WORKS, Lancaster, N. Y.: Catalogue No. 15, referring to Bit Braces, straight and ratchet, Machine Knives, Planer Head Bolts, &c.

JOHN STORTZ & SON, Philadelphia, Pa.: Catalogue of Tools for cement, concrete and asphalt workers, contractors and paviors, containing a chapter of valuable information regarding cement sidewalk construction.

JOHNSTON HARVESTER COMPANY, Batavia, N. Y.: Illustrated catalogue of Mowers, Hay Tedders, Rakes, Reapers, Binders, Harrows, Cultivators, &c.

JAMES A. RILEY & SON, Goshen, Ind.: Catalogue of Steel Specialties, including Mail Boxes, Chimneys, Tanks, Troughs, &c.

BROWN BROS. MFG. COMPANY, Nappanee, Ind.: Catalogue of Galvanized Steel Tanks, Troughs, &c., with circular referring to Nappanee Rural Delivery Mail Boxes.

ASPINWALL MFG. COMPANY, Jackson, Mich.: Catalogue of Potato Machinery, including Cutters, Planters, Sprayers, Diggers, Sorters, &c.

H. B. IVES COMPANY, New Haven, Conn.: Illustrated catalogue No. 12, with discount sheet, referring to Sash Locks, Window Stop Adjusters, Mortise Door Bolts and Builders' Hardware Specialties, some of which are new to the trade.

THE E. D. CLAPP MFG. COMPANY, Auburn, N. Y.: Catalogue and price-list for 1906, illustrating Carriage Forgings, including Clips, King Bolts, Couplings, Fifth Wheels, Perch Plates, Stump Joints, Special Forgings, &c.

WATERBURY RUBBER MFG. COMPANY, 75 Warren street, New York: Price-list of Sphincter Grip Spring Steel Armored Hose; also circular referring to Infallible Sheet Packing.

AMERICAN ARC LAMP COMPANY, Kalamazoo, Mich.: Catalogue devoted to illustrations and descriptions of Standard and Miniature Inclosed Arc Lamps.

L. BEST, 45 Vesey street, New York: Hanger card illustrating in miniature over 100 different articles in Grinding Machinery, Tools and Supplies, which he carries in stock. Mr. Best is selling agent for the Sterling Emery Wheel Mfg. Company, Tiffin, Ohio.

THE JOHNSON MFG. COMPANY, Urbana, Ohio: Circulars relating to Valve Oil Cans made in tin and copper and to Rural Free Delivery Mail Boxes. The company also manufactures heavy Tin and Galvanized Iron Ware adapted for railroad and factory use.

NANZ & CO., 127 Duane street, New York: Catalogue of time recording devices, including Detectors, Recorders, Stamps, Dials, Supplies and Repairs.

BOND STEEL POST COMPANY, Adrian, Mich.: Illustrated circulars devoted to Rural Mail Boxes, of which three different styles are offered—Uncle Sam's Favorite, the Dixie and the Dollar. Also circular of the Automobile Steel Hitching Post, the strength and durability and economy of which are referred to.

BRANCHVILLE ICE TOOL WORKS, George B. Gruman, proprietor, Branchville, Conn.: Illustrated catalogue of Ice Tools, including Plows, Scrapers, Planes, Tongs, Scales, &c.

EUREKA REFRIGERATOR COMPANY, Indianapolis, Ind.: Handsome illustrated catalogue of Opal Glass Refrigerators, giving details as to construction, circulation, insolution, &c.; also circular referring to Opal Cigar Store Fixtures.

BERGER MFG. COMPANY, Canton, Ohio: "Steel, Style and Safety," an elaborate catalogue of Steel Office and Vault Furniture and Equipment, profusely illustrated.

YORK HAVEN PAPER COMPANY, York Haven, Pa.: Samples of ½, 1, 2 and 3 ply X-L-Old Roofing.

WEBSTER & PERKS TOOL COMPANY, Springfield, Ohio: Illustrated catalogue and price-list of Simplex Trimmers and Paper Hangers' Tools.

KELLY FOUNDRY & MACHINE COMPANY, Goshen, Ind.: Catalogue A, referring to Rural Mail Carriers' Supplies, Rural Mail Boxes, Vehicle Heaters, Runner Attachments, Storm Fronts, &c.; also catalogue B, referring to Lawn Swings, Ladders, Kitchen Furniture, Refrigerators, &c.

D. F. JONES MFG. COMPANY, LIMITED, Gananoque, Ontario: 1906 price-list and illustrated catalogue of Shovels, Spades, Scoops, Drainage Tools, &c.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM FORBES HARDWARE COMPANY, Limited, Vancouver, B. C., who handle Shelf and Heavy Hardware, Stoves, Furnaces, Tinware, &c.

FROM C. N. TRUAX, Long Branch, N. J., successor to the Hardware, Paint and House Furnishing Goods business of Slocum Bros. & Co.

FROM NOEL HARDWARE & IMPLEMENT COMPANY, Mounds, I. T., successor to Mounds Supply Company.

FROM I. W. WALLACE, Sedgwick, Col., who has purchased the Hardware, Stove, Implement, Paint and Sporting Goods business of G. A. Waddington.

FROM K. E. RUPP, Hoyt, Kan., who has acquired the Hardware, Stove and Implement business of W. B. Allen.

FROM A. & B. HEYING, who have succeeded B. Heying in the Hardware, Stove and Sporting Goods business at Glasgow, Mo.

FROM E. J. SALTER, Hooker, S. D., successor to Salter & Hanson in the Hardware, Stove, Paint and Implement business.

FROM MONETT HARDWARE COMPANY, Monett, Mo., W. G. Batson, manager, which is about to open a retail Hardware store.

FROM HELLEKSON & SCHULSTAD, Forbes, N. D., who have just embarked in business as retailers of general and Builders' Hardware, Furniture, &c.

FROM J. G. SEEFUS, who has purchased the Hardware, Stove and Sporting Goods business of E. A. Doyle, Elkhorn, Neb.

FROM OSGOOD HARDWARE COMPANY, New Castle, Pa., which expects to open up in business about the middle of March. The company consists of T. J. Garvin, president, and Lucius Osgood, secretary-treasurer, the latter having a thorough knowledge of the business, acquired as a member for many years of the Dickson Hardware Company. The company, which will incorporate with a

fully paid in capital stock of $10,000, has secured as quarters for the new business two fine rooms, 20 x 90 feet each. Prior to the opening of the store the company may be addressed at 408 Lawrence Savings & Trust Building. The company will carry General Hardware, Stoves, Tinware, House Furnishing Goods, Paints, Sporting Goods, Mill Supplies, &c.

FROM ITALY HARDWARE & FURNITURE COMPANY, Italy, Texas, which firm is now composed of J. B. Cheatham and Jas. Bracken.

FROM KELLEY-HILL HARDWARE COMPANY, which has just opened a new store in Ephrata, Wash.

FROM MEADOWS MERCANTILE COMPANY, Meadows, Iowa, which has been formed by consolidating the Hardware business of Lyons & Warr with the general store of M. E. Keizur.

FROM THOMAS HARDWARE COMPANY, Thomas, Okla., which has been incorporated with a capital of $6000 to conduct a Hardware, Stove, Implement, Paint, Wagon and Harness business.

FROM M. A. BENSON & Co., Saranac, Mich., who are in the market for 50 dozen No. 2 Shovels and Picks.

FROM CRAIG & SHOFFNER HARDWARE COMPANY, Nashville, Tenn., which has just commenced the jobbing business, giving special attention to goods for general stores. John F. Craig was for many years connected with the Gray & Dudley Hardware Company and S. D. Shoffner was formerly identified with A. M. Tenison & Son.

FROM R. H. LAKE, Greenville, Miss., who has had the management of the Hardware department of the Goyer Company of Greenville and will continue in charge of same until May 1. Mr. Lake advises us that he will either buy out the Hardware part of the Goyer establishment or open up a new wholesale business after that date.

FROM R. F. SCOTT, Du Bois, Neb., who has bought out the Hardware and Furniture business of G. W. Potts.

FROM H. S. MELLOR, Castlewood, S. D., who has succeeded to the Hardware, Stove, Paint and Sporting Goods business of T. Mellor & Son.

FROM J. A. THOMSON & Co., 45 Merrimac street, Lowell, Mass., dealers in Hardware and Mill Supplies.

FROM C. H. LEE, who has bought out the Glen Elder Hardware Company, Glen Elder, Kan.

FROM RUSH SPRINGS HARDWARE & IMPLEMENT COMPANY, Rush Springs, Ind. Ter.

J. B. HUNTER & Co., 60 Summer street, Boston, Hardware dealers, have made conspicuous improvements in their store, making it one of the most attractive and convenient in New England. The firm had rented a part of the building only, but in order to make the necessary changes a lease was taken of the whole building, part of which will be sublet. The cellar floor was lowered 2 feet and the street floor 3 feet, bringing it to the desired level. A modern front has been put in, providing two large show windows, one at either side of the entrance. The latter has been changed from a double to a single door, saving much space. The interior of the store is undergoing equally important changes. Much additional showroom has been obtained. The firm has added considerably to its line, especially Sporting Goods, including Guns and Rifles. When the interior changes are completed it is the intention of the firm to carry a very complete line of Sporting Goods.

Farrell & Keefe, North Redwood, Minn., have incorporated with a capital stock of $15,000 to conduct the Hardware, Farm Implement and Machinery business.

TRADE ITEMS.

THE Bicycle trade in the United States, in its campaign for a revival of Bicycle riding, has issued a two-leaf circular inviting everybody to submit reasons for riding a wheel. Premiums are offered of $50, $25 and $10 for the first, second and third best reasons submitted in writing. Information and booklets with dealers' imprint can be arranged for by application to A. M. Scheffey, secretary, 2 Hudson street, New York.

B. F. GOODRICH COMPANY, Akron, Ohio, has issued a booklet, entitled "Hose Protection," referring to new lines of Woven Marlin and Red Painted Cotton Coverings applicable to steam, water, air drill or pneumatic hose. The booklet also contains a table giving size, ply and outside dimensions of the various kinds of hose protected by these Coverings.

EDWARD M. WHEELER has been elected secretary and treasurer of the Rhode Island Perkins Horse Shoe Company, Providence, R. I. George L. Bowen has been appointed general sales agent.

LOUIS ERNST & SONS, Hardware merchants, Rochester, N. Y., have issued a very neat folder in which the fact that 1906 marks the fiftieth anniversary of the establishment of their business is gracefully chronicled. A portrait of Louis Ernst, the founder, who died in 1892, is given, together with a brief history of the business.

AT the annual election of officers of the Milwaukee Retail Hardware Dealers' Association, held at the Builders' Club, Milwaukee, January 9, the following were selected for the ensuing year: President, Charles Pflugardt; vice-president, J. O. Prasser; corresponding secretary, F. Herrenbruck; financial secretary, William Groylan; treasurer, J. Stollenwerk. The Wisconsin State Hardware Association, which will hold its annual meeting in Milwaukee, February 7 and 8, will be entertained by the Milwaukee association on the opening night of the convention with a band concert.

THE BILLINGS & SPENCER COMPANY, Hartford, Conn., which was organized in 1869 and is said to have been the first company in this country to make a business of the manufacture of Drop Forgings, has gradually increased its line of products, and in addition to Drop Forgings makes quite a varied line of Machinists' Tools. The company has also taken up the manufacture of Drop Hammers, of which over 400 have been sold. These Hammers vary in weight of Hammer from 400 to 5000 pounds.

SEVERAL weeks since we referred to the fire which visited the establishment of Bering-Cortes Hardware Company, Houston, Tex., in a way which might have suggested that the company's store had been destroyed. This was not, however, the case, as only the warehouse and its contents were destroyed, the store several blocks away not being affected. As already noted plans have been drawn up for the erection of a large new structure to take the place of the former warehouse.

ON the 12th ult. the R. Woodman Mfg. & Supply Company, 63 Oliver street, Boston, Mass., sustained a heavy loss by fire and water, the operations of the entire plant and the filling of orders being arrested for the time being. The company now announces that all insurance claims have been amicably settled and that after four weeks of hard and energetic labor it has succeeded in erecting a thoroughly equipped and up to date plant, so that the company is again in a position to take care of orders for Ticket Punches, Hand Tally Registers, Speed Indicators, Easy Car Pushers, &c., with the utmost dispatch.

THE NATIONAL-ACME MFG. COMPANY, Cleveland, Ohio, to more satisfactorily serve its constantly increasing trade in the Middle and Northwestern States, has decided to open a warehouse in Chicago at an early date where a complete stock of Set and Cap Screws and kindred goods will be carried. The exact location has not yet been determined.

W. WILKIE, the venerable president of the Wilkie Hardware Company, Fond Du Lac, Wis., died on the 8th inst., in the seventy-fifth year of his age.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

CLEVER STORE CONTRIVANCES.

THE Hardware and Housefurnishing store of Barton Green, 529 Ocean avenue, Jersey City, N. J., contains a number of interesting devices for advertising and displaying goods, several of which are illustrated in the accompanying cuts.

The Arrangement of Saws

in an upright wall case devoted to Tools is shown in Fig. 1. The back of the case is of wood ceiling, to which

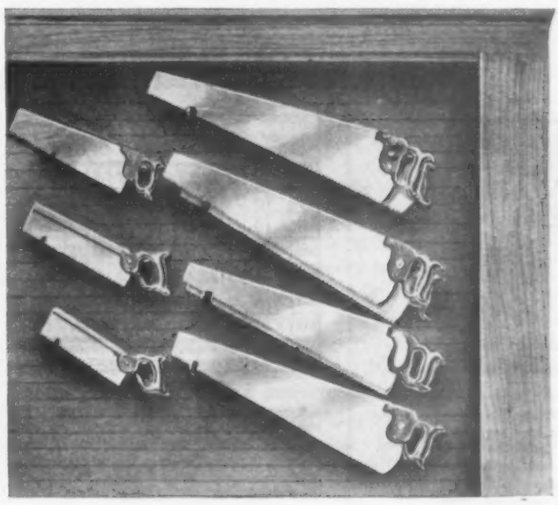


Fig. 1.—Saws Hung on Wooden Pins in an Upright Wall Case Devoted to Tools.

1-inch square pins 9 inches long are attached by angle irons. The pins are 7 inches apart perpendicularly and

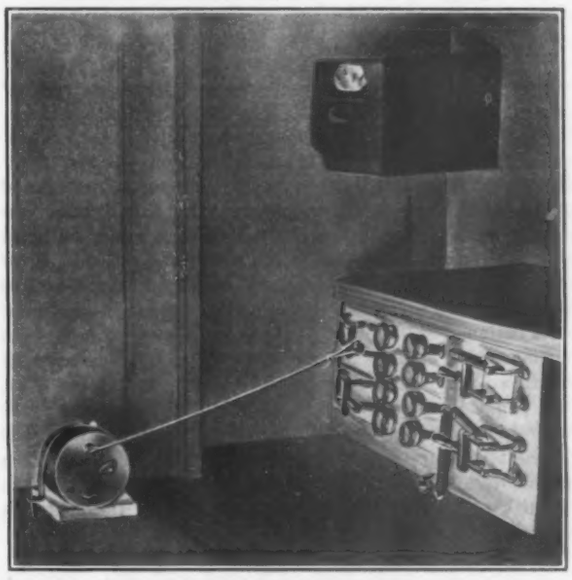


Fig. 2.—Alarm Clock Connected with a Switch by Cord to Shut Off Electric Lights at a Given Hour.

arranged to good advantage so as to cause the Saws to point upward. A number of Saws are put on one pin.

Shutting Off Electric Lights.

In Fig. 2 is illustrated an alarm clock with the gong removed, which is connected from the alarm key to one of the switches of a switchboard by a cord. This particular switch controls the electric lights in the show windows. The electric lights are kept burning in the show windows after the store is closed for the night.

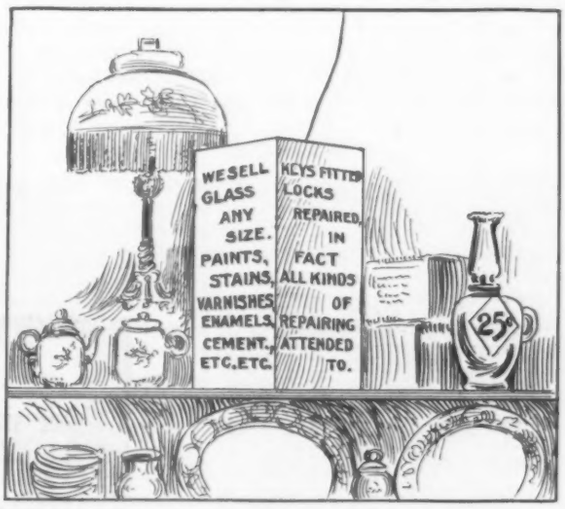

WE SELL GLASS ANY SIZE. PAINTS, STAINS, VARNISHES ENAMELS, CEMENT, ETC. ETC.
KEYS FITTED LOCKS REPAIRED IN FACT ALL KINDS OF REPAIRING ATTENDED TO.
25¢

Fig. 3.—Transparency Illuminated by Electric Light for Window Advertising.

As it is unnecessary to have the windows illuminated after 11 o'clock, when there are few if any passersby, the alarm is set for that hour. When the alarm goes off the revolution of the key winds the cord upon it, pulling the switch open and extinguishing the lights. To highten

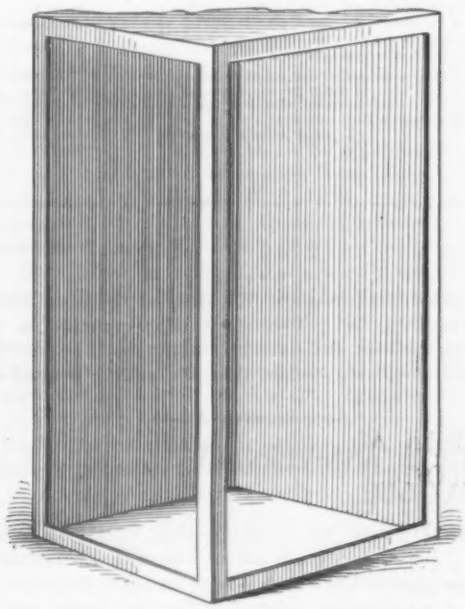


Fig. 4.—Construction of Transparency Before Being Covered with Lettered Paper.

the window effect by exciting the curiosity of passersby a skedoodle socket is used on the electric lamps, which automatically turns the lights off and on at periods of one or two seconds apart during the entire time that the lights are burning.

Transparencies.

In addition to having electric lights inside the globes of kerosene lamps and gas and electric portables in the

windows, advertising is done by the use of transparencies, as shown in Fig. 3, which have electric lights inside. These are made of cereal pasteboard boxes, covered with manila wrapping paper, with the sides of the box cut out, leaving the bottom and the four corners, as in Fig. 4. Special announcements are lettered on manila paper with black paint and pasted over the openings, appearing as in Fig. 3. The light shining through the paper brings out the lettering to good advantage. When a change of lettering is desired the old ones are cut out to the edges of the box and newly lettered sheets are pasted along the edges.

A Mailing List.

When the present proprietor of this store bought the stock he was an entire stranger in the neighborhood. To obtain a list of desirable families to whom he might mail printed matter he secured the names of attendants at churches in the neighborhood as a nucleus for a mailing list, which has since been enlarged by those of other customers.

It Is a Rule

in this store never to say, "we have not got it," when any particular kind or style of article is asked for which is not carried, but to show the nearest thing in stock to that inquired for. This plan often results in sales, whereas the sale and customer might both be lost if the bare statement was made that the article wanted could not be furnished.

FORTIETH ANNIVERSARY CATALOGUE.

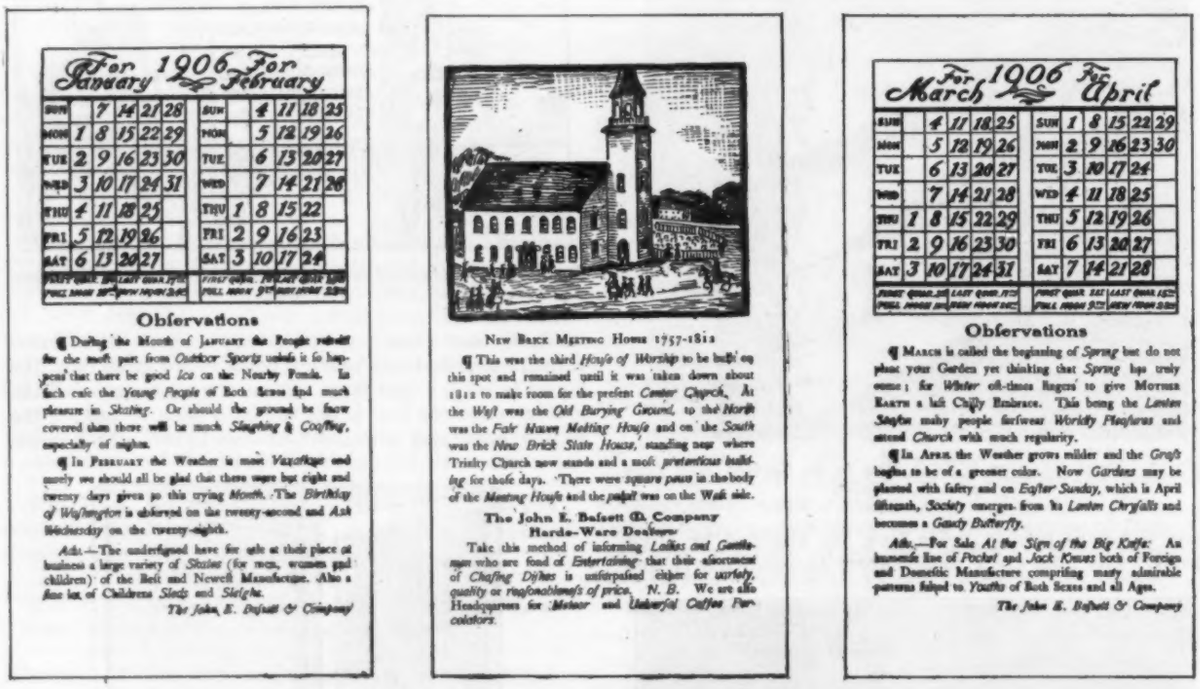
E. B. WOODRUFF HARDWARE COMPANY, Knoxville, Iowa, in honor of the 40th anniversary of the establishment of the business issued a souvenir catalogue of exceptional interest. The catalogue was well printed, about 10 x 6½ inches in size, and contained more than a hundred pages. Portraits were given of the officers, including Mr. Woodruff, the founder, who is still active in the direction of the business. In an introductory address to the public reference was made to the attention always given by the company to the matter of quality in the lines handled, as per the following extract:

It has always been the pride of this house to buy and sell only the best of its kind. A poor implement is dear at any price and will always damage the house that sells it, no matter how cheap. It is the quality of the article that creates the impression. No poor implement gives satisfaction, regardless of its cost. The design of this catalogue is to familiarize the readers with just a few of the goods we have adopted and sold in the past and will continue to offer for the future. There are many lines that we have handled for years and shall continue to handle, that are not represented here. While every article sold in a Hardware store is classed as an implement, there are always good, better and best. It is the best that we have always tried to find, and while the price of the best is always higher than that of the indifferently good or better, it is always cheaper to buy the best.

The left hand pages of the catalogue are used to illustrate and describe selections from the extensive line of goods carried, while nearly the whole of the right-hand pages are devoted to the presentation of a lot of miscellaneous information and statistics of general interest. This adds much to the value and usefulness of the very effective and somewhat unusual pamphlet.

BASSETT'S "NEW HAVEN ALMANACK."

PRIOR to Christmas the John E. Bassett & Co., New Haven, Conn., issued a quaint and very entertaining booklet in which attention was unobtrusively called to certain of the company's goods, especially those suitable for holiday gifts. Several pages of the booklet are illustrated herewith to give an idea of its character and typography. The front cover bore the title "The New Haven Almanack for the Year 1906," together with an intimation that the booklet contained a "calendar of days and months, to which are added certain old time pictures, with some historical facts and many pertinent observations." The fact that what is now the Bassett business was established as long ago as 1784 is brought out in an announcement on the inside of the front cover. The pages of the booklet were slightly larger than the cover in which they were inclosed. The publication was gotten up in appropriate dress, and with its interesting matter touching on local events and happenings of the far distant past must have made a hit with those among whom it was circulated.



Pages from Bassett's "New Haven Almanack."

Joseph Goss, senior partner of the firm of Jos. Goss & Son, Centerville, Iowa, celebrated his golden wedding on December 27. Mr. Goss went to Keokuk, Iowa, in 1846, and in 1855 removed to Centerville. In 1859 he embarked in business as clerk in a general merchandise store and in 1867 entered the boot and shoe and Agricultural Implement business. In 1881 he bought out M. H. Kirkham, Hardware dealer, and since has conducted the business at the same old stand.

SUCCESS IN BUILDING UP A RETAIL HARDWARE BUSINESS.

BY A PENNSYLVANIA MERCHANT.

"I have had 40 years' experience in the Hardware business, and I want to say to you that if I could take up that part of the business that suits me best I'd stick to Machinists' Tools and Supplies."—Quoted in *The Iron Age*, September 14, 1905.

A FEW years ago a clerk in a large Hardware store located in a growing manufacturing city noticed at stock taking time many shelves loaded to the limit with slow moving items, stickers and obsolete patterns of Builders' Hardware. The stock consisted of many departments or classes of goods, such as Painters' Supplies and Mixed Paints, Builders' Hardware, Lime, Sand, Sewer Pipe, Wagon Materials, Carpenters' and Machinists' Tools, in addition to Shelf Hardware and Kitchen Goods. Some items yielded from 5 to 10 per cent. profit, many 50 per cent. From the clerk's point of view it appeared that the larger profit was eaten up by the line showing the small percentage of profit; in other words the 50 per cent. line carried the store. He argued that it would be a pleasure to have a business in which

All the Unprofitable Items

could be left out of the stock. With this idea in mind he decided to test the feasibility of the idea and opened a store carrying no goods that did not yield 50 per cent. The venture was launched about eight years ago. In talking with the writer it was learned that the original investment was only $1500, with present stock of $6000. This is so arranged that expensive help is not required. Eliminating heavy goods, he has no delivery wagon, a strong boy at $5 a week doing the delivering, with the help of the trolley line, and the rough work about the store. The clerk help varied according to seasons, from one to three girls being employed. The head salesgirl, who can trim windows, he pays $8 a week, and the others from $4 to $5. In looking over his stock it was noticed that every article possible was out on view. Under the Cutlery cases, on racks and shelves, were all kinds of Buckets and Cuspidors. Over the cases Curtain Poles were hung from the ceiling, and from these suspended Razor Strops, Wool Dusters, Coat Hangers, &c. In place of counters were racks for showing goods. These were covered with trays filled with small articles. One rack was in the process of being changed. Garden Trowels, Whet Stones and Grass Shears were being replaced with Jar Caps, Rubbers, Fruit Fillers and Sieves.

Waiting on Themselves.

When customers would come in in bunches, as they sometimes do, it was noticed that many would pick up the article wanted and hand it to the clerk, who perhaps was stuck with a lady making up her mind what color Stain to use. Wrapping space being convenient at all points of the store the clerk could attend to several customers. It was noticed that every tray had a price ticket, assisting customers in waiting on themselves.

The Proprietor's Story.

In answer to the question: "Are you satisfied with your growth?" the writer was made to feel that he was taken close to the proprietor's inner life. "In my short career," said he, "I have at times been made to feel that my business was nearly a failure, as when I would notice the show my competitors were making, but having seen three go to the wall bankrupt, and being called by the receiver, in two instances, to invoice their stocks, I am made to believe that 'All is not gold that glitters.' My plan now is to keep down the investment. From my first invoice to the present day I have discounted my bills. This makes my credit high and is a temptation to increase the investment. Once having, as I thought, occasion to test my credit, I made application for $1000 worth of goods on six months' to a year's time. Not only was the request granted, but larger opportunities for credit offered. After my second year I took a vacation, and every year I take at least two weeks, not away from business exactly, but from the details of my own shop. When in a strange city or town I always visit the Hardware stores, and must say I do not envy them their big stocks. When I see their hard work my business is a great pleasure to me. My wife often speaks of the time when I will 'retire.' This prospect gives me no pleasure, but to enjoy my life and business now is my pride."

The Successful Hardware Merchant.

This is the case of a man who overrode the "if" and took up that part of the business that suited him. Is he justified by what measure of success he has gained, or is this instance only an exception of a daring man who broke away from traditions and the truly successful Hardware merchant only he who carries the 10 per cent. line with the others, not only because he must, but because it pays,

It would be a great help to many in the trade if *The Iron Age* would open a door, and through it show how the big Hardware stores are conducted and where they stand as to net profit.

TRADE DINNERS.

THE second annual dinner of the salesmen reporting to the Baltimore branch of the National Enameling & Stamping Company was held at the Hotel Belvedere in that city on the 29th ult. George H. Harper acted as toastmaster. Among other addresses were those by William H. Matthai, secretary of the company; George W. Knapp, director general; Charles L. Wagandt, manager of the Keen & Hagerty factory; William L. Stansbury, assistant manager of the Baltimore branch, and Albert S. King, manager of the Philadelphia branch.

The third annual dinner and meeting of the salesmen and officers of the Stowell Mfg. & Foundry Company, South Milwaukee, Wis., was held on the 3d inst. in the office building of the company. Chas. E. Sammond, vice-president and treasurer of the company, presided over the festivities. Among those who addressed the gathering were D. G. Dalton, M. T. Evans, W. S. Deighton, R. A. Nourse, W. L. Bigelow, H. B. Wells, J. H. Dosser, Louis Keller and A. J. Ricker.

The annual dinner given to its sales managers by the Buck's Stove & Range Company, St. Louis, was held at the Mercantile Club in that city on the 5th inst. About 50 persons participated. J. W. Van Cleave, president of the company, acted as toastmaster. Formal addresses were those made by Fredric W. Gardner, chairman of the Board of Directors, whose subject was "Impressions of a Stove Man," and Glenwood S. Buck, manager of advertising, who was down on the programme to respond to the toast "Impressions of a Layman." Subsequently "The Boys" had an inning and made good use of the opportunity to entertain and instruct the gathering.

On the night of December 20, A. J. Harwi Hardware Company, Atchison, Kan., gave a banquet to its traveling salesmen and house and office staff. The affair afforded opportunity for good fellowship and social enjoyment, as well as for the interchange of helpful ideas as to winning and holding trade and the best methods of selling various lines of goods. W. H. Harwi, secretary and treasurer of the company, acted as toastmaster, while A. J. Harwi, the head of the house, told how Hardware was sold 45 years ago.

Charter Oak Stove & Range Company, St. Louis, Mo., tendered the annual dinner to its salesmen on the 2d inst., the scene of the gathering being the Mercantile Club. The menu was of a novel character and impressively reminded the salesmen that success is only won by intelligent and persevering effort. There were no formal addresses, but in accordance with a humorous suggestion in the menu, which invited those present to "start somethin'," say on "the arguments and methods you use to sell our goods," many interesting and instructive short talks were given.

THE SIMONDS MFG. COMPANY IN CANADA.

THE SIMONDS MFG. COMPANY, Fitchburg, Mass., manufacturer of Saws of various kinds for both hand and power, and Machine Knives, has taken over the plants, good-will and business of the Canada Saw Company, Limited, having factories at Montreal, St. John, N. S., Ottawa and Toronto. The Canada Saw Company, Limited, began business in January, 1904, by the amalgamation and absorption of the James Robertson Saw Company of Montreal, Toronto and St. John, N. S., which had been in business since 1868; and the Ottawa Saw Company, Ottawa, Ont., established 1893. It is the intention of the Simonds Mfg. Company to take over the charter of the Canada Saw Company and change the name to the Simonds Canada Saw Company, later enlarging the business by adding to it the manufacture of all kinds of Machine Knives, similar to those long made by the company in the United States.

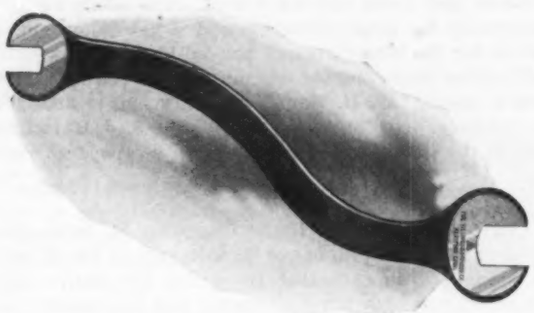
The formal transfer of these important interests to the Simonds Mfg. Company representatives was made at the beginning of the new year, and it now has in Montreal an entirely new factory, which is nearly completed, together with an option on a tract of land adjoining the present site which is 100 x 600 feet and close to both the Grand Trunk and Canadian Pacific Railroads. The Canadian Dumping Clause act, so called, is the reason given by the Simonds Mfg. Company for its purchase of these well-established Saw businesses, together with the fact that Saws can best be marketed close to the timber supply. It is the company's intention to continue the management and working force of the Canada Saw Company, thus giving the new Simonds Canada Saw Company a start with a long established business. As soon as the machinery, &c., necessary can be installed the company will begin to extend its line of manufacture, making in Canada as fast as possible exactly the same quality tools as are now made by it in the United States.

Diamond Cable and Gear Chains.

The line of cable and gear chains manufactured by Diamond Chain Company, Indianapolis, Ind., includes a variety of sizes made of steel, brass and copper. The cable or balancing chains are used extensively for sash chains, balancing counter weights on boring mills, planers, drill presses, &c., or for feed weights on special machinery. They are also used in chain oiling boxes and in numerous places where wire cable or rope is not efficient on account of operating over small pulleys. The gear chains are used for light chain drive in model work and vending machines where the duty is light. The company's capacity is such that it is prepared to furnish chain in very large quantities.

The B. & S. General Service Wrench.

The Billings & Spencer Company, Hartford, Conn., has added to its line of wrenches a general service wrench



The B. & S. General Service Wrench.

of the double end pattern, as shown in the accompanying cut, designed for use in erecting or dismantling plows, carriages, wagons and for general service where a light wrench is desired. It is also recommended as a handy tool for the automobile kit. It is dropped forged and case hardened, with milled openings, and is furnished in five sizes, the milled openings being ⅜ and ½, ½ and ⅝, ⅝ and ¾, ¾ and ⅞, and ⅞ and 1 inch. The lengths are respectively 6¼, 7⅛, 8¼, 9¼ and 10⅜ inches.

Uwanta Combination Wrench.

Uwanta Wrench Company, Meadville, Pa., is offering the adjustable combination wrench illustrated herewith. By pressing the adjusting nut, as shown in the cut, the movable jaw can be slid forward or backward to suit the size of pipe or nut desired. A closer contact can then be made with the object between the jaws in the manner usual with screw wrenches, that of turning the adjusting nut. The wrench is almost instantly adjusted to and released from any sized nut or pipe within the limits of its capacity, and as the pressure of use is against the adjusting nut, which meshes in square threads, it is impossible to make it slip when on the adjusting center. The material and workmanship are referred to by the manufacturer as of the best that enter into wrench building and the tool is guaranteed against all reasonable usage. All parts are finished, polished and interchangeable. The wrenches are made in 10-inch size, for pipe from ¼ to 1 inch in diameter; also in 15-inch size, for pipe from ½ to 2¼ inches in diameter. Screw wrenches without combination jaws but with instantly adjustable feature are made in 8, 10, 12 and 15 inch sizes.

Uwanta Combination Wrench.

Standard Direct Current Electric Lamps.

The accompanying cuts represent a Standard direct current shop and factory lamp offered by the American Arc Lamp Company, Kalamazoo, Mich. In Fig. 1 the lamp is shown with the covers closed. These are of cast iron finished in black japan, with all exposed parts in polished nickel. The lamp is dust proof and built to stand rough usage. It is interchangable and made to burn singly across 110 to 220 volt direct current circuit. The 110-volt lamp may be adjusted from 100 to 150 volts and to consume from 4½ to 5½ amperes. It takes 78 to 80 volts at the arc. The lamp has a length of carbon life from 150 to 200 hours and its rated candle power 1200. The 220-volt lamp may be adjusted from 200 to 250 volts and to consume from 2½ to 3½ amperes, taking 140 volts at the arc, and has a rated candle power of 1200, with a length of carbon life of 200 to 240 hours. The lamp is 22 inches long and weighs 24½ pounds complete. The carbon is ½ inch by 12 inches, solid. In Fig. 2 the lamp is

illustrated with the covers open. The covers automatically catch when open, permitting easy access to all parts of the interior of the lamp. When closed they snap together, requiring no tools. The interior parts are finished in heavy nickel white plate to prevent rust or corrosion. The outer globe is held by a single pawl and is readily

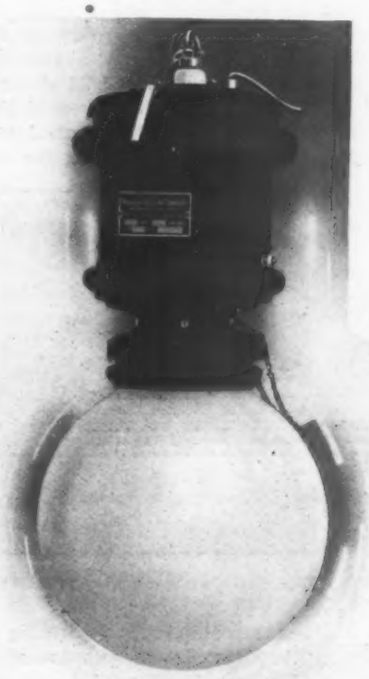


Fig. 1.—Direct Current Shop Lamp.

detached or replaced, and when detached is held suspended entirely out of the way. The inner globe is held from above by two fingers, which prevents shadows. The direct current frame is shown complete, without covers, in

Fig. 2.—Direct Current Shop Lamp, Covers Open.

Fig. 3. Part of the frame is cut away to show the working of the clutch on the upper carbon. The frame is cast in one piece, with a hollow tube in the center inclosing the upper carbon and clutch. The construction and action of the mechanism of the lamp is referred to as simple. In addition, the company manufactures direct

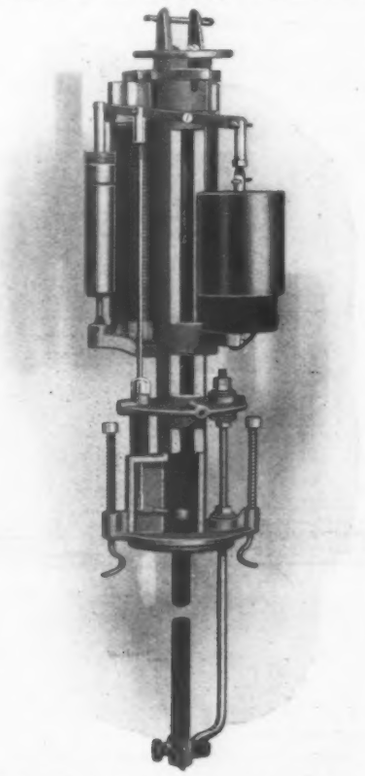


Fig. 3.—Direct Current Frame Complete.

current lamps for store and office use, with spun copper covers, finished in oxidized copper or polished copper.

Universal Screen Door Catch.

The Peck, Stow & Wilcox Company, Cleveland, Ohio, has just put on the market the Universal screen door catch here illustrated as applied to a door. It is made entirely of stamped wrought steel and has an automatic friction catch, with stop. The catch holds the door securely when closed, but a push from the inside or a pull from the outside releases the catch. When the sliding

Universal Screen Door Catch, Actual Size.

stop, seen in the center of catch, is moved to the left it locks the catch, so that door cannot be opened from either side while in that position. The latch bolt is so made that it has both a parallel and angular sliding motion. An important feature of this catch is the ease and rapidity with which it can be put on, without mortising for either catch or striker. It is made in old copper finish, put up in boxes of one dozen each, complete with screws, and in cases of five gross. Small working models showing service conditions will be supplied by the manufacturers.

Dixie Improved Bread Maker.

The illustration representing a bread maker, given herewith, is broken away to provide a view of its interior construction. The cover is provided with a hinged door for use in watching the progress of the mixing and to

Fig. 1.—Dixie Improved Bread Maker.

add flour or other necessary ingredients to secure the proper proportions. To lift the cover entirely the ball is removed, when the crank, cover and mixer can be lifted from the pail. The clamp, Fig. 2, is made entirely of

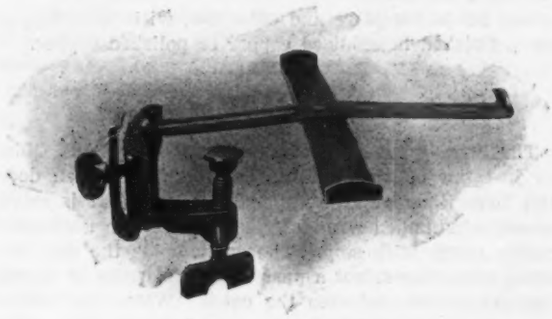


Fig. 2.—Clamp for Bread Maker.

stamped steel, nonbreakable, all parts of which are retinned and highly finished. The device is referred to as containing only the best material and as being simple, durable and effective in operation. It is furnished in two sizes: No. 1, with a capacity of four loaves, 12 quarts, and No. 2, capacity ten loaves, 20 quarts. It is put on the market by Standard Stamping Company, Albion, N. Y.

Sherman Roofing Nail.

H. B. Sherman Mfg. Company, Battle Creek, Mich, is introducing the roofing nail shown in the accompanying cut. It is practically a one-piece nail, a large heavy disc

Sherman Roofing Nail.

being securely fastened to the nail, so that they will not become separated. Among the points of excellence claimed for the nail are the following: That no time is wasted in assembling tins and nails; that being attached there is a head for each nail; that the nails are convenient to handle, even on a steep roof; that there is little chance for a leak between the head and nail; that the heads are not liable to rust through nor are the heads apt to curl up when the nails are driven.

Winslow's Vineyard Rink Roller Skates.

An addition to its line of ball bearing rink roller skates is announced by the Samuel Winslow Skate Mfg. Company, Worcester, Mass., the new skates being illustrated in the accompanying cuts. Fig. 1 shows Vineyard Nos. 17 and 18, for men, and Fig. 2 Vineyard Nos. 19 and 20, with full heel strap, especially adapted to women's shoes. They are described as combining the best of ma-

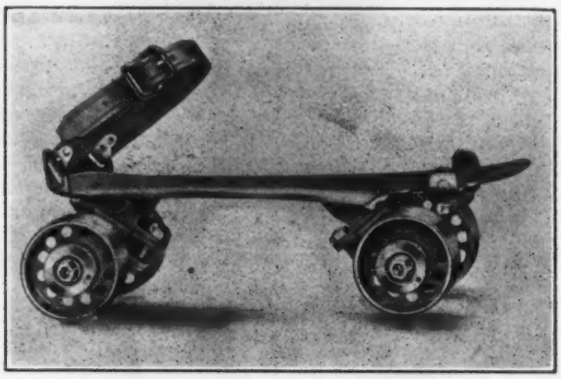


Fig. 1.—Winslow Rink Skate, Vineyard Nos. 17 and 18, for Men.

terial with fine workmanship, thus possessing the greatest durability. The foot plates are reinforced beneath by a bridge truss, which is referred to as an entirely new feature to prevent springing or bending of the plates. Their rubber adjustment mechanism permits short turning, insuring the skater's perfect direction and control. The tension of the rubber can be perfectly adjusted, and each rubber is held in a box so as to prevent spreading under tension and allow using until entirely worn out. The skates can be taken apart and assembled very easily

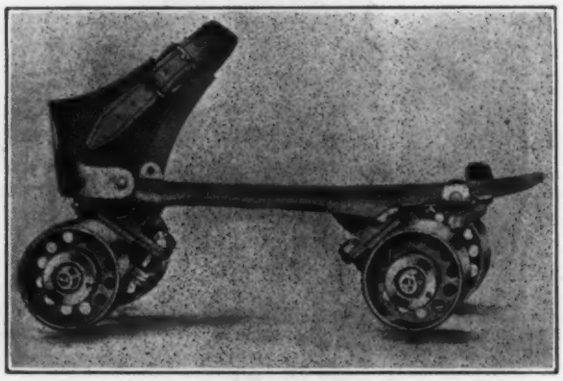


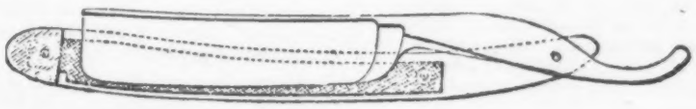
Fig. 2.—Winslow Rink Skate, Vineyard Nos. 19 and 20, with Full Heel Strap for Women.

and quickly, every part being in plain sight, while the maker guarantees a minimum of expense for maintenance and repairs. For these reasons the skates are held to be especially desirable for rink managers, whose patrons generally have but slight consideration for the property they rent. Both men's and women's styles are offered in two finishes, Nos. 17 and 19 having steel foot plates and all other metal parts bright steel and Nos. 18 and 20 having all metal parts nickel plated and buffed. All styles are furnished with rolls of web steel, fiber, turkey boxwood, fiber covered, with boxwood centers and aluminum.

Felt Pad Razor.

Felt Pad Razor Works, 84 Detroit street, Milwaukee, Wis., is offering the felt pad razor shown herewith. The handle is lined with felt pads, saturated with the manufacturer's antiseptic vaseline oil, which is always on the blade and between the fine cutting teeth of the

edge. This is referred to as soothing and healing in its nature, producing a smooth, healthy skin, free from the slightest irritation. The razor looks like and is the regular barber style, the pads being concealed in the handle, completely out of view and unobserved, except after careful scrutiny. A safety guard may be used with the razor if desired. The manufacturer remarks that small particles of soap and moisture which the strop cannot remove from the teeth of the blade are converted into rust, thus dulling the razor. The object of the antiseptic oil on the pads is to keep the razor's teeth pure, clean and always sharp, honing being unnecessary, it is said. The razor is full hollow ground, 5/8-inch wide, square end, point slightly rounded, etched in blue "Antiseptic," double shoulder, full polished tang and back, finely finished blade and filed tang.



Felt Pad Razor.

Vandegrift Wood Handle Wrench.

The Vandegrift Mfg. Company, Shelbyville, Ind., represented by the Smith & Hemenway Company, 296 Broadway, New York, has just put on the market the Vandegrift special screw wrench, with wood handle, as here shown, which is similar to an all iron wrench, open handle previously made, both of which are now obtainable. As now made there are two scales or wood handles, securely riveted through the handle. The wrench is referred to by the company as made of malleable iron and machine steel and can be supplied in 8 and 10 inch sizes,

Vandegrift Wood Handle Wrench.

measured open. It is furnished with plain head and plain body and with polished head, both plain and japanned body, as desired. This wrench is designed for use largely by the agricultural trade.

Tool Makers' Knife Edge Straight Edges.

Brown & Sharpe Mfg. Company, Providence, R. I., is offering the knife edge straight edges as shown here-with, in cases, also the tools separately. The set consists of a glass test bar and four straight edges from 2¼ to 6¼ inches in length. The straight edges, for work requiring extreme accuracy, are made from the best quality of tool steel and every care is taken to insure their being straight and true. They are highly finished and the working edges hardened and carefully lapped after grinding. The backs are so shaped as to allow the straight edges to be set upright when not in use, in which position they are less liable to injury and do not collect dirt from the bench.

Tool Makers' Knife Edge Straight Edges.

W. H. Slayers has recently acquired a Hardware business in Malvern, Iowa.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, City, raw	44 @45
Linseed, City, Boiled	45 @46
Linseed, State and West'n, raw	42 @43
Linseed, raw Calcutta seed	@65
Lard, Extra Prime, Winter	65 @66
Lard, Extra No. 1	48 @49
Lard, No. 1	38 @40
Cotton-seed, Crude, f.o.b. mills	27 @28
Cotton-seed, Summer Yellow, Prime	33½@34
Cotton-seed, Summer Yellow, off grades	45 @50
Sperm, Crude	@..
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	60 @62
Sperm, Bleached Winter	63 @65
Tallow, Prime	51 @53
Whale, Crude	@..
Whale, Natural Winter	42 @44
Whale, Bleached Winter	44 @46
Menhaden, Brown, Strained	23 @27
Menhaden, Light, Strained	24 @28
Menhaden, Bleached, Winter	29 @30
Menhaden, Ex.-Bld., Winter	31 @32
Menhaden, Southern	@..
Cocoanut, Ceylon ₱ lb	6¼@ 6½
Cocoanut, Cochin ₱ lb	7¼@ 7½
Cod, Domestic, Prime	34 @35
Cod, Newfoundland	38½@40
Red, Elaine	30 @31
Red, Saponified ₱ lb	4¼@ 4¾
Olive, Italian, bbls	57 @62
Neatsfoot, prime	48 @49
Palm, Logos ₱ lb	6¼@..

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	10½@11½
Black, 29 gravity, 15 cold test	11½@12½
Black, Summer	10½@11½
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	12½@13
Paraffine, 903 gravity	11½@12
Paraffine, 883 gravity	9½@ 9½
Paraffine, Red	11½@13

In small lots ½¢ advance.

Miscellaneous—

Barytes:		
White, Foreign	₱ ton	$17.50@19.00
Amer. floated	₱ ton	18.00@19.00
Off color, No. 2	₱ ton	13.50@15.00
Chalk, in bulk	₱ ton	3.50@ 3.75
Chalk, in bbls	₱ 100 lb	.. @ .40
China Clay, English	₱ ton	11.00@17.00
Cobalt, Oxide	₱ 100 lb	2.50@ 2.60
Whiting, Common	₱ 100 lb	.43@ .48
Whiting, Gilders	₱ 100 lb	.50@ .55
Whiting, Ex. Gilders	₱ 100 lb	.55@ .60

Putty, Commercial—₱ 100 lb

In bladders	$1.65 @1.85
In bbls. or tubs	1.15 @1.35
In 1 lb to 5 lb cans	2.60 @2.90
In 12½ to 50 lb cans	1.45 @1.85

Spirits Turpentine—₱ gal.

In Oil bbls	67½@68
In machine bbls	68 @68½

Glue—

	₱ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	15 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	₱ lb
Bleached Commercial	38 @39
Bone Dried	48 @49
Button	40 @45
Diamond I	@55
Fine Orange	46 @50
A. C. Garnet	43 @45
D. C	60 @..
Octagon B	@52
T. N	42 @45
V. S. O	58 @..

Colors in Oil—

	₱ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	10 @15
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	₱ lb
Lead, English white, in Oil	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
In Barrels	@ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price	@ 1½

Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	₱ lb
Lead, White, Dry, in bbls	@ 6¾
Zinc, American, dry	4¾@ 5
Zinc, French:	
Paris, Red Seal, dry	9½
Paris, Green Seal, dry	10½
Antwerp, Red Seal, dry	8½
Antwerp, Green Seal, dry	10
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12¾@13¾
Lots of less than 1 ton	13¼@13¾
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11¾@12¼
Lots of less than 1 ton	11¾@12¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	₱ lb
Black, Carbon	5 @10
Black, Drop, American	4 @ 6
Black, Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.50@3.60
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
Litharge, American, bbls	@ 7¼
Ocher, American ₱ ton	$8.50@16.00
Ocher, American Golden	2½@ 3½
Ocher, French	1¼@ 2½
Ocher, Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
Orange Mineral, French	10¾@12¼
Orange, Mineral, German	8½@10
Orange, Mineral, American	8½@ 8¾
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¾
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer. ₱ 100 lb	$0.50@1.25
Red Venetian, English. 100 lb	$1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1¼@ 2
Sienna, American, Burnt and Powdered	1¼@ 2
Talc, French ₱ ton	$15.00@30.00
Talc, American ₱ ton	15.00@25.00
Terra Alba, French ₱ 100 lb	90 @1.00
Terra Alba, English ₱ 100 lb	90 @1.00
Terra Alba, American, ₱ 100 lb, No. 1	70 @80
Terra Alba, American, ₱ 100 lb, No. 2	60 @65
Umber, T'key, Brt. & Pow	2½@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1¼@ 2
Umber, Raw, Amer	1¼@ 2
Yellow Chrome	11 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@68
Vermilion, English, Import	75 @80
Vermilion, Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00 ..... 33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent 35%
Taplin's Perfection 30%

Ammunition—
See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils ..... ℔ lb 6¾@7 ¢
Hay-Budden, Wrought ..... 9@9¼ ¢
Horseshoe brand, Wrought ..... 9@9¼ ¢
Trenton ..... ℔ lb 9@9¼ ¢

Imported—
Peter Wright & Sons ..... ℔ lb 10¼ ¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00 ..... 15&10%

Apple Parers—
See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co. 33⅓%

Augers and Bits—
Com. Double Spur ..... 75@75&5%
Jennings' Pats., reg. finish ..... 50&10@60%
Black Lip or Blued ..... 60&10%
Boring Mach. Augers ..... 70&10%
Car Bits, 12-in. twist ..... 50&10%
Ford's Auger and Car Bits ..... 40&5
Forstner Pat. Auger Bits 25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.. 25%
No. 30, R. Jennings' list ..... 40&7½%
Russell Jennings' ..... 25&10&2½%
L'Hommedieu Car Bits 15%
Mayhew's Countersink Bits 40%
Millers Falls ..... 50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits ..... 40&10%
Pugh's Black 20%
Pugh's Jennings' Pattern 35%
Snell's Auger Bits 60%
Snell's Bell Hangers' Bits 60%
Snell's Car Bits, 12-in. twist ..... 60&10%
Wright's Jennings' Bits 50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26 ..... 50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18 ..... 60%
Ford's, Clark's Pattern ..... 60&5%
C. E. Jennings & Co., Steer's Pat. .. 25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut ..... *$3.00@3.25*
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz. ..... *$5.50@6.00*
Ames ..... 25&10%
Universal 20%
Wood's Universal 25%

Ship Augers and Bits—
Ship Augers ..... 45&5@60%
Ford's ..... 33⅓@5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' ..... 35&5%
Ohio Tool Co.'s 40%
Snell's 40%

Awl Hafts—
See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled ..... *gro. $2.75@3.00*
Unhdled, Shldered ..... *gro.65@66¢*
Unhandled, Patent ..... *gro.66@70¢*
Peg Awls:
Unhandled, Patent ..... *gro. $1@$1.4¢*
Unhdled, Shldered ..... *gro. 65@70¢*
Scratch Awls:
Handled, Com ..... *gro. $3.50@4.00*
Handled, Socket ..... *gro.$11.50@12.00*
Hurwood 40%

Awl and Tool Sets—
See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality *$6.75*
Second Quality *$6.25*
Double Bit, base weights:
First Quality *$9.00*
Second Quality *$8.50*

Axle Grease—
See *Grease, Axle*

Axles—
Iron or Steel
Concord, Loose Collar ..... *4¼@4¾¢*
Concord, Solid Collar ..... *4¾@5¼¢*
No. 1 Common, Loose ..... *3¼@3¾¢*
No. 1½ Com., New Style ..... *3¾@4¼¢*
No. 2 Solid Collar ..... *4¼@4½¢*
Half Patent:
Nos. 7, 8, 11 and 12 ..... *75@75&5%*
Nos. 13 to 14 ..... *70&10@75&5%*
Nos. 15 to 18 ..... *75&10@75&10&5%*
Nos. 19 to 22 ..... *75&10@75&10&5%*

Boxes, Axle—
Common and Concord, not turned *lb., 4½@5¢*
Common and Concord, turned, lb., 5½@6¢
Half Patent ..... *lb. 8½@9¢*

Bait—
See *Fishing—*

Hendryx:
A Bait 20%
B Bait 25%
Competitor Bait ..... 20&5%

Balances—
See *Sash—*

Caldwell new list 50%
Pullman ..... 50&10@60%

Spring—
Spring Balances ..... *50&10@60%*
Chatillon's:
Light Spg. Balances ..... 40&10%
Straight Balances 40%
Circular Balances 50%
Large Dial 30%

Barb Wire—
See *Wire, Barb.*

Bars—
See *Crow—*

Steel Crowbars, 10 to 40 lb. ..... *per lb., 3@3¼¢*

Towel -
No. 10 Ideal, Nickel Plate ..... ℔ gro. $8.50

Beams, Scale—
Scale Beams ..... *40&10@50%*
Chattillon's No. 1 ..... 30%
Chattillon's No. 2 ..... 40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized ..... ℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric ..... ℔ gro. $7.80
No. 2 Buffalo ..... ℔ gro. $9.00
No. 3 Perfection Dust ..... ℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned ..... ℔ doz. $1.20
Holt, No. 1, Tinned ..... ℔ doz. $1.50
Holt, No. B, Japanned ..... ℔ doz. $2.00
Holt, No. 2, Tinned ..... ℔ doz. $2.25
Lyon, No. 2, Japanned ..... ℔ doz. $1.25
Lyon, No. 3, Japanned ..... ℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover $6.00
No. 75 Improved Dover $6.50
No. 100 Improved Dover $7.00
No. 102 Improved Dover, Tin'd. $8.50
No. 150 Improved Dover, Hotel. $15.00
No. 152 Imp'd Dover, Hotel, T'd. $17.00
No. 200 Imp'd Dover Tumbler $8.50
No. 202 Imp'd Dover Tumbler, T'd. $9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo $7.00
Wonder (R. M. W. Co.) ℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List ..... *60&10@70&10%*

Hand—

Inch	*6*	*7*	*8*	*9*	*10*
Doz	*$4.75*	*5.70*	*6.65*	*7.60*	*8.85*

Molders—

Inch	*9*	*10*	*11*	*12*	*14*
Doz	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Net Prices.

Bells—
See *Cow—*

Ordinary goods ..... *75&5@75&10&5%*
High grade ..... *70&10@70&10&5%*
Jersey ..... 75&10%
Texas Star 50%

Door—
Abbe's Gong 45%
Burton Gong 50%
Home, R. & E. Mfg. Co.'s ..... 55&10%
Lever and Pull, Sargent's ..... 60&10&10%
Trip Gong ..... 50&10@50&10&5%
Yankee Gong 55%

Hand—
Hand Bells, Polished, Brass ..... *60&10@60&10&5%*
White Metal *60%*
Nickel Plated ..... *50&10&60%*
Swiss ..... *60@60&7½%*
Cone's Globe Hand Bells ..... 33⅓@35%
Silver Chime ..... 33⅓@35%

Miscellaneous—
Farm Bells ..... *lb. 2½¢*
Steel Alloy Church and School ..... *50&10@60%*
American Tube & Stamping Co. Gongs 75%
Table Call Bells ..... 50@50&10%

Belting—
See *Leather—*

Extra Heavy, Short Lap ..... *60&5%*
Regular Short Lap ..... *60&10&5%*
Standard *70%*
Light Standard ..... *70&5%*
Cut Leather Lacing ..... *50&5%*
Leather Lacing Sides, per sq. ft. ..... *25¢*

Rubber—
Agricultural (Low Grade) ..... *75@75&5%*
Common Standard ..... *70@70&10%*
Standard ..... *60&5@60&10%*
Extra ..... *60@60&5%*
High Grade ..... *50&5@50&10%*

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender 40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—
See *Tackle—*

Common Wooden ..... *70&10@75%*
Hartz St. Tackle Blocks ..... 50@50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves ..... 50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty Mal. Iron ..... 50&10%
Stowell's Self Loading 60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c ..... *30&10@40&10%*

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co. 33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ x 6 and smaller ..... *75@—%*
Larger and Longer ..... *65&5@—%*
Phila. Eagle, $3.00 list May 21, '99 ..... *80%*
Bolt Ends, list Feb. 14, '95 ..... *65&10@—%*
Machine, ⅜ x 4 and smaller ..... *75@—%*
Machine, larger and longer ..... *65&5@—%*

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:

Inch	*3*	*4*	*5*	*6*	*8*
Per doz	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:

Inch	*6*	*8*	*10*
Per doz	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:

Inch	*6*	*8*	*10*
Per doz	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch	*6*	*8*	*10*
Per doz	*$0.75*	*.95*	*1.25*

Wrt Barrel Japd ..... *80@80&10%*
Wrt " Bronzed ..... *50@50&10%*
Wrt. Spring ..... *70&10@70&10&10%*
Wrt. Shutter ..... *50&5@50&10&5%*
Wrt. Square Neck ..... *75@75&10%*
Wrt Square ..... *66⅔&10@66⅔&10&10%*
Ives' Patent Door 60%

Plow and Stove—
Plow ..... *65&10&10@70%*
Stove ..... *87½&10@—*

Tire—
Norway Iron *80%*
Norway Iron *80%*
American Screw Company:
Norway Phila., list Oct. 16, '84 ..... 80%
Eagle Phila., list Oct. 16, '84 ..... 82½%
Bay State, list Dec. 28, '99 ..... 80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84 ..... 80%
Eagle Phila., list Oct. 16, '84 ..... 82½%
Eclipse, list Dec. 28, '99 ..... 80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84 ..... 80%
Eagle Phila., list Oct. 16, '84 ..... 82½%
Mount Carmel, list Dec. 28, '99 ..... 80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99 ..... 80%
Norway Phila., list Oct., '84 ..... 80%
Upson Nut Co.:
Tire Bolts 72½%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch	*1¼*	*1½*	*1¾*	*2*
Per doz	*$4.80*	*5.60*	*6.40*	*8.00*
Inch	*2¼*		*2½*	
Per doz	*$6.65*		*11.50*	

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each 25%

Boxes, Mitre—
C. E. Jennings & Co. 30%
Langdon ..... 15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.:
Nos. 240 to 460 ..... 30%
Nos. 50 and 60 ..... 33⅓

Braces—
Common Ball Bearing, American ..... *$1.25@1.30*
Barber's ..... 50&10&10@60&10%
Fray's Genuine Spofford's 60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 ..... 60%
C. E. Jennings & Co. ..... 50&5%
Mayhew's Ratchet 60%
Mayhew's Quick Action Hay Pat. 50%
Millers Falls Drill Braces ..... 25&10%
P., S. & W. Co., Peck's Pat. 60@60&5%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel ..... *80&10@80&10&5%*
Griffin's Pressed Steel ..... 80@80&10%
Griffin's Folding Brackets ..... 70&10%
Stowell's Cast Shelf 75%
Stowell's Sink 50%
Western, W. G. Co., Wire ..... 60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co. ..... 75&20%
Western, W. G. Co. 80%
Wire Goods Co. ..... 75@75&10%

Buckets, Galvanized—
Price per dozen.

Quart	*10*	*12*	*14*
Water, Regular	*1.40*	*1.70*	*1.90*
Water, Heavy	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier ..... ℔ gro. $36.00

Bull Rings—
See *Rings, Bull*

Butts—
See *Brass—*

Wrought, list, Sept., '96 ..... *15@—%*
Cast Brass, Tiebout's 50%

Cast Iron—
Fast Joint, Broad ..... *40&10@50%*
Fast Joint, Narrow ..... *40&10@50%*
Loose Joint ..... *70&10@75%*
Loose Pin ..... *70&10@75%*
Mayer's Hinges ..... *70@70&5*
Parliament Butts ..... *70@70&5*

Wrought Steel—
Table and Back Flaps *75%*
Narrow and Broad *75%*
Inside Blind *75%*
Loose Pin *75%*
Loose Pin, Jap'd ..... *70&10%*
Loose Pin, Ball and Steeple Tip *85%*
Japanned Ball Tip Butts ..... *70&10%*
Bronzed, Wrt., Nar. and Inside Blind Butts ..... *55&10%*

Ex. 30@40&10%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series 5%
1200 series 33⅓%
200, 300, 600 and 900 series ..... 60&10%
Hendryx Bronze:
700, 800 series ..... 40&10%
Hendryx Enameled ..... 40&10%

Calipers—
See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong ..... *per lb. 4½¢*
Sharp, 1 prong ..... *per lb., 4½@4¾¢*

Burke's Blunt....4@4¼¢
Burke's Sharp....4½@4¾¢
Gautier, Blunt....4@4¼¢
Gautier, Sharp....4½@4¾¢
Perkins', Blunt Toe....₱ lb 3.65¢
Perkins', Sharp Toe....₱ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	3	10 gal.	
Illinois Pattern	$1.35	1.85	2.05	each.
New York Pattern	1.50	2.20	2.45	each.
Baltimore Pattern	1.50	2.20	2.45	each.
Dubuque	1.35	1.60	1.75	each.

Cans, Oil—

Buffalo Family Oil Cans:		
3	5	10 gal.
$18.00	60.00	120.60 gro., net.

Caps, Percussion—
Eley's E. B.....58@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—
Berdan Primers, $2 per M...90%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—
Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.40
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—
Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$8.60	5.80	4.85	4.10	3.95	3.85	3.80
⅝	¾	⅞ to 1		1⅛ to 1¼ inch.		
$3.75	3.60	3.55		3.70		

German Coil.....60&10&10@70%

Halter—
Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Covert Mfg. Co.
Halter.....35&5%
Covert's Saddlery Works
Halter.....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring.$24.50
6½—6-2, Str'ght, with ring.$25.50
6½—8-2, Str'ght, with ring.$29.50
6½—10-2, Str'ght, with ring.$34.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....60&10%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron.....60&10&5@70%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10%
Gal. Pump Chain.....lb. 4@4½%
Covert Mfg. Co.:
Breast.....35&5%
Heel.....35&5%
Rein.....35&5%
Stallion.....35&5%
Covert Sad. Works:
Breast.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Dog Leads and Kennel Chains. 40@40&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—
Oneida Community:
Copper Chain.....60&5%
Steel Chain.....60%
Pullman:
Bronze Chain.....60%
Steel Chain.....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)
Carpenters' Blue.....gro. 38@40¢
Carpenters' Red.....gro. 33@35¢
Carpenters' White....gro. 28@30¢
See also Crayons.

Checks, Door—
Bardsley's.....43%
Eclipse.....60&10%
Pullman, per gro.....$54.00
Russwin.....40%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—
Socket Framing and Firmer
Standard List.....75@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
L. & I. J. White.....30@30&5%
L. & I. J. White, Tanged.....25&5%

Tanged—

	lb.
Tanged Firmers.....33 1-3@40%	
Buck Bros.....30%	
Charles Buck.....30%	
C. E. Jennings & Co. Nos. 191, 181..25%	
Cold—	
Cold Chisels, good quality..13@15¢	
Cold Chisels, fair quality..11@12¢	
Cold Chisels, ordinary...9@10¢	

Chucks—
Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck....35%
Beach P'at., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat. all sizes.35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....40&10@50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....40%

Sidewalk—
Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

Clippers, Horse and Sheep—
Chicago Flexible Shaft Company: (30%)
'98 Chicago Horse, each....$8.75
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each.....$4.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75

Clips, Axle—
Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....75@75&5%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—
Metal Stamping Co.....40%

Mane and Tail—
Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.
Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
Wm. Schollhorn Co.:
Excelsior Dividers.....60%
Lodi Dividers.....75%

Conductor Pipe,—
L. C. L. to Dealers:

Territory:	*Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper.*
Eastern:			
	70&12½%	*60&10 %*	*50%*
Central:			
	70&5 %	*60&2½%*	*40&10&5%*
Southern:			
	65&12½%	*50&15 %*	*40&12½%*
So. Western			
	60&15 %	*50&7 %*	*40&10 %*
	Copper.		*14&16 oz.*
Eastern			*50&10%*
Central			*50&7½%*
Southern			*50&5%*
So. Western			*50&2½%*

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal, each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal,	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled					25%
Agate Lined					25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—
Soldering Coppers, 3 lbs. to pair and heavier, 23@24¢; lighter than 3 lbs. to pair.....25@26¢

Cord—Sash—
Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 24½¢; No. 6, 25½¢.
Cable Laid Italian.....lb., 4, 18¢; 8, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted. 17@19¢
Patent Russia.....lb...@14¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted.lb. 12@13¢
Anniston Cordage Co.: ₱ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ₱ lb, 24½¢; No. 7, 23½¢; Nos. 8 to 12, 23¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....₱ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton.....₱ lb 40 ¢
Braided, Italian Hamp....₱ lb 40 ¢
Braided, Linen.....₱ lb 55 ¢
Braided, White Cotton or Spot....₱ lb 35 ¢
Massachusetts, White.....₱ lb 30 ¢
Massachusetts, Drab.....₱ lb 35 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen.....57½¢
See also Chain and Ribbon.

Wire, Picture—
List Oct., '00.....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10&5%

Cradles—
Grain.....40&12½%

Crayons—
White Round Crayons, gr. 6@6½¢
Cases, 100 gro., $5.00 at factory.
D. M. Steward Mfg. Co.: (20% Case lots, 20%)
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Zelnicker's Lumber:
Red, Blue, Green.....₱ gro. $6.50
Black.....₱ gro. $4.00
See also Chalk.

Crooks, Shepherds'—
Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—
American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's.....₱ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....₱ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ₱ doz. $24.00.....40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....₱ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₱ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..₱ gr. $18@$20
Slaw Cutters, 2 Knife..₱ gr. $22@$30

Tobacco—
All Iron, Cheap..doz. $4.25@$4.50
Enterprise.....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—
Appleton's, ₱ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....₱ doz. $6.25
Iwan's Perfection Post Hole Digger...₱ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....₱ doz. $7.25
Kohler's Universal.....₱ doz. $14.00
Kohler's Little Giant.....₱ doz. $12.00
Kohler's Hercules.....₱ doz. $10.00
Kohler's Invincible.....₱ doz. $9.00
Kohler's Rival.....₱ doz. $8.00
Kohler's Pioneer.....₱ doz. $7.00
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors, Screen—
Phillips', style E, ⅞ in....₱ doz. $10.00
Phillips', style 077, ⅞ in....₱ doz. $7.50
Phillips', style x-y, ⅞ in....₱ doz. $10.50

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Bit Stock.....60&10&10@70%
Taper and Straight Shank.....60&10@60&10&5%

Drivers, Screw—
Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....50%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50, 53 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles.....65%
No. 86.....75%
Victor.....55%
Defiance.....70%
Swan's:
Nos. 7565 to 7568.....50%
No. 7540.....40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper.*
Eastern:			
	80¢ 5 %	*70&10%*	*50%*
Central:			
	75¢10&10%	*70¢ 2½%*	*40&10&5%*
Southern:			
	75¢12½%	*60&20%*	*40&12½%*
So. Western:			
	75¢ 5 %	*65¢ 5%*	*40&10 %*

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories:

	Galv. Steel	*and Galv. C. I.*
Gauge		*60¢10%*
No. 26		*50%*
No. 24		*25%*
No. 22		*10%*
Copper		*50%*

Elbows, Stove Pipe—
Dover, one piece.....40%
Perfect Elbows (R. M. W. Co.)....40%

Emery, Turkish—
4 to 46 5½ to 220 Flour.

Kegs	*lb. 5*	*5¼¢*	*5¼¢*
½ Kegs	*lb. 5¼¢*	*5¾¢*	*5¾¢*

¼ Keys.....lb. 5½¢ 6 ¢ 4 ¢
10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Watling's .....40&10%

Cord and Weight—
Ives 40%

Faucets—
Cork Lined.....50@50&10%
Metallic Key, Leather Lined.. 60&10@70%
Red Cedar.....40&10@50%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key..50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ⅜ and ½ inch.....20%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....$3 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....$3.75
Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	$3.25	3.75	4.25	4.75

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's 70%
Stowell's Giant Grindstone Hanger.. ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy .....50&10&10%
Stowell's Grindstone Fixtures, Light.. 60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	$1.30	$1.60	$1.90	$2.20	$3.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped.. 3.65
Waterproof Dbl. Taped.. 4.40
Waterproof Tpl. Taped.. 5.15
} Extra 25% off

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.80
Spike, Metal, No. 1, $4.00; 2, $4.80
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush.. 25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....gro. $4.50@6.00
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00
Pike Mower and Tool Grinder, each $6.00
} 33⅓%
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.00

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web .....35&5%
Jute Rope.....50%
Sisal Rope.....30&10%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties 60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&2½@33⅓&10&7½%
Engineers' and B. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners' .....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb..50¢ .80&5@—%
3 to 5 lb., per lb., 40¢..80&5@—%
Over 5 lb., per lb., 30¢, 80&10&5@—%
*Wilkinson's Smiths'...*lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—
Atkins' 40%
Champion .....45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $2.50@$3.00
Brad Awl.....gro. $1.65@$1.75
Chisel Handles:
Apple Tanged Firmer, gro. assorted .....$2.40@$2.65
Hickory Tanged Firmer, gro. assorted .....$2.15@$2.40
Apple Socket Firmer, gro. assorted .....$1.75@$1.95
Hickory Socket Firmer, gro. assorted .....$1.45@$1.60
Hickory Socket Framing, gro. assorted .....$1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 80¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel .....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, No. 1.....per doz. $2.00
Reliable, No. 2.....per doz. $3.00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered .....60&2%
Special .....70&5%
Lawrence Bros.:
Advance .....60&10%
Cleveland 75%
Clipper, No. 75.....60%
Crown .....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant .....60&5%
Hummer .....70&5%
New York.....60&10%
Peerless 75%
Sterling .....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10.50&10%
Roller B'r'g St'l Track No. 12.$2.15
Roller B'r'g St'l Track No. 13.$2.30
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17.....$1.25
Trolley F. D. No. 120.....$2.10
Trolley F. D. No. 121.....$2.25
Trolley F. D. No. 150.....$2.35
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&10%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24.....$1.30
Trolley B. D. No. 27.....$1.40
Trolley B. D. No. 28.....$1.60
Roller Bearings Nos. 39, 41, 43 .....75%
Anti-friction No. 42.....60&20%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 136 .....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas 60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator 40%
Express 50%
Freight Car Door.....60%
Interstate .....60&10%
Lundy Parlor Door.....50&10%
Magic 60%
Matchless .....60&10%
Nansen .....70&5%
Parlor Door.....50&10%
Railroad .....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 401, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle 70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot 60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing..℔ doz. $5.00
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing....60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet 50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track..50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Extra 5@10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $2.00; 1 pair Round Nickeled, $3.00; 4 pair Round Nickeled.. $27.00
Victor Folding.....℔ gro. $9.00
Western, W. G. Co.....70&10%

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—
Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 11 and 13..75&10%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.... 75&10&5%
Tip Pat'n, Nos. 1, 3 & 5.....10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 55.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.85

New England:
With Latch.....doz. ...@$2.00
Without Latch..doz. ...@$1.60
Reversible Self-Closing:
With Latch.....doz. ...@$1.75
Without Latch..doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets, Nos.

	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron $6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge .....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap...75&5%
Cor. Ex. Heavy T.70&10%
} Extra 10@10&5 %

Screw Hook and Strap.
- *6 to 12 in. .lb. 3¾¢*
- *1¼ to 20 in. .lb. 3½¢*
- *22 to 36 in. .lb. 3¼¢*

Screw Hook and Eye:
- *¾ to 1 inch.....lb. 6½¢*
- *⅝-inch.....lb. 7½¢*
- *½-inch.....lb. 8½¢*

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—
	Per doz.			
Inch	*15*	*16*	*17*	*18*
Galv. Open	*$2.50*	*2.75*	*3.00*	*3.25*
Jap. Open	*$1.90*	*2.10*	*2.25*	*2.55*
Galv. Funnel	*$3.00*	*3.30*	*3.60*	*3.90*
Jap. Funnel	*$2.45*	*2.65*	*2.85*	*3.30*

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe...℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6¼ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....50%

File and Tool—
Nicholson File Holders and File Handles.....33⅓&40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co, Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....$1.30
Whiffletree.....lb. 5¾@6¢
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Knobs—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....ft. 5 @ 6 ¢
3-ply Guaranteed..ft. 8 @ 9 ¢
4-ply Guaranteed..ft. 10 @11 ¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8 @ 9 ¢
Fair Quality.....ft. 10 @11 ¢

Irons—
Sad—
From 4 to 10.....lb. 3 @3½¢
B. B. Sad Irons.....lb. 3¼@3½¢
Mrs. Potts', cents per set:

Nos.	*50*	*55*	*60*	*65*
Jap'd Tops	*68*	*65*	*78*	*75*
Tin'd Tops	*71*	*68*	*81*	*78*

New England Pressing..lb. 3¾@4¢

Pinking—
Pinking Irons.....doz. 60¢

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....50%

Corn—
Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....75@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz. $5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—
Buffalo.....℔ gro. $13.00

Miscellaneous—
Farriers'.....doz. $3.00@3.25
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....gro. $1.25@$1.50
Carriage, Jap., all sizes..... gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—
See *Belting, Leather—*

Ladders, Store, &c.—
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 100.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—
Regular Tubular, No. 0..... doz. $4.25@4.50
Lift Tubular, No. 0..... doz. $4.75@5.00
Hinge Tubular, No. 0..... doz. $4.75@5.00.
Other Styles.....40@40&5%

Bull's Eye Police—
No. 1, 2¾-inch.....$2.75@3.00
No. 2, 3-inch.....$3.00@3.25

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw.. doz. 35@40¢

Door—
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.30
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—
Small.....doz. 50¢; large, 60¢
Covert Mfg. Co., Cotton and Hemp.45%

Lifters, Transom—
R. & E.....33⅓%

Lines—
Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.25*	*2.00*	*1.75*
75 feet	*$1.75*	*1.35*	*1.10*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ net, 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.

Locks— Cabinet—
Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.

Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—
Stowell's.....50%

Padlocks—
Wrought Iron....75&10&5@80&5%
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular.
Jennings', Nos. 1 and 4.....55&5%
Millers Falls.....5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—
Reisinger Invincible Hand Power.... ℔ doz. $48.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$54.00
Champion Rotary Banner No. 1	$54.00
Standard Champion No. 1	$48.00
Standard Perfection	$26.00
Cintl Square Western	$30.00
Uneeda American, Round	$30.00

Mallets—
Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners' Hickory and Applewood.....doz. 45&5@50%

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list.. 50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....all sizes, $1.85@2.00
Cheap.....all sizes, $2.00@2.50
Better Grade..all sizes, $2.50@4.50

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list..70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—
Wire Nails and Brads, Papered, List July 20, 1899..85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—
Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...60&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5
Putnam	23	21	20	19	18	....33⅓%
New Putnam	19	18	17	16	16	..10&10%

Western.....℔ lb 8½¢
Jobbers' Special Brands..... per lb .9@10¢

Picture—
	1¼	*2*	*2½*	*3*	*3½ in.*
Brass H'd	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head	*.. 1.10*	*1.10*	*1.10*	*..*	*gro*

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, Blank or Tapped..$4.90
Hexagon, Blank or Tapped.$5.30
Square, Blank, C. & T.....$5.20
Hexagon, Blank, C. & T...$5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....$5.30
Hexagon, Blank.....$5.20
Square, Tapped.....$5.20
Hexagon, Tapped.....$5.70

Oakum—
Best.....lb. 6¼@6½¢
U. S. Navy.....lb. 5¾@6¢
Navy.....lb. 4½@5¢
Plumbers' Spun Oakum...3½@3¢
In carload lots ½¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....50&10%
Tin or Steel.....65&10@70%
Zinc.....65&10@70%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
National.....50&10%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50

Egg—
Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—
Asbestos Packing, Wick and Rope.....lb.14@16¢

Rubber—
(Fair quality goods.)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ℔ lb 80¢.....25@25&5%

Miscellaneous—
American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute.....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Creamery—
R. M. W. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.60&10@60&10&12½%

Fry—
Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—
Regal, R. W. M. Co., ℔ doz., Nos. 5, $1.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
$30.00	35.00	42.00	34.00	39.00	46.00	

Paper—Building Paper
Asbestos:	*lb.*	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.6¢		*33 1-3%*
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.....8¢		
Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in.....10¢		

Per roll
Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll ..... 35@40¢
Medium weight, 30 lbs. to roll, 40@45¢
Heavy weight, 40 lbs. to roll.. 56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb, ton.....$50.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—
1 ply (roll 300 sq. ft.), ton.... $32.50@35.50
2 ply, roll 108 sq. ft.....55¢
3 ply, roll 108 sq. ft.....75¢
Slater's Felt (roll 500 sq. ft.) .75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—
Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....85%
Emery Paper and Cl'h.60@60&10%

Parers— Apple—
Advance.....℔ doz. $4.00
Baldwin.....℔ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....℔ doz. $4.00
Dandy.....each $7.50

Eureka Improved.....each $20.00
Family Bay State.....⅌ doz. $15.00
Improved Bay State.....⅌ doz. $36.00
Little Star.....⅌ doz. $5.00
New Lightning.....⅌ doz. $7.00
Reading 72.....⅌ doz. $5.25
Reading 78.....⅌ doz. $6.25
Rocking Table.....⅌ doz. $6.20
Turn Table '98.....⅌ doz. $6.00
White Mountain.....⅌ doz. $5.00

Potato—

Saratoga.....⅌ doz. $7.00
White Mountain.....⅌ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899.....75%
Cronk's Handled Garden Mattock, ⅌ doz., $6.40.....33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass.....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.

Standard, 2-6, in.....60%
Extra Heavy, 2-6 in.....70%
Fittings.....75%

Pipe, Merchant—

Consumers, Carloads.

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
⅛ & ¼ in.	71%	55%	68½%	52½%
⅜ in.	73%	59%	72½%	60½%
½ in.	75%	63%	72½%	60½%
¾ to 6 in.	79%	69%	77 %	67 %
7 to 12 in.	74%	59%	72 %	56½%

Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey..71%
Maryland, Delaware, E. Pa. West. Pa. and West Va....75%
Virginia.....76%
Ohio, Michigan and Ky....77%
Indiana.....77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—Wood Planes—

Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding.....33⅓&10%
Bailey's (Stanley R. & L. Co.).....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Unicn.....60%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

Plane Irons—

Wood Bench Plane Irons.....25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....⅌ doz. $8.50

Plates—

Felloe.....lb. 3¾@4¼¢
Self-Sealing Pie Plates (R. M. W. Co.), ⅌ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 $2.00 | 8 $2.25 | 10 $3.00 | 12-in. $3.75
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....50%
P., S. & W. Tinners' Cutting Nippers.....40%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Elm City.....33⅓%
Lodi.....50%
Paragon.....50%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ⅌ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers, lb. 8½@9 ¢
½-lb. papers.....lb .9 @9½¢
¼-lb. papers.....lb .9¾@10¼¢

Pokes, Animal—

Ft. Madison Hawkeye.....⅌ doz. $3.25
Ft. Madison Western.....⅌ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ⅌ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ⅌ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ⅌ doz., $3.00; No. 2 (1 qu.), $3.72.....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ⅌ doz. 50¢; ⅌ gro. $4.50; ½ lb boxes, ⅌ doz. $1.25; 1 lb boxes, ⅌ doz. $2.25.
U. S. Liquid, 8 oz. cans, ⅌ doz., $1.25; ⅌ gro., $12.00.
Barkeepers' Friend Metal Polish, ⅌ doz., $1.75; ⅌ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ⅌ doz.....$2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ⅌ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ⅌ doz. 75¢
Black Jack Paste, ¾ lb cans, ⅌ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ⅌ gr. $5.75.....10%
Dixon's Plumbago.....⅌ lb 8¢
Fireside.....⅌ gr. $2.50
Gem, ⅌ gr. $4.50.....10%
Japanese.....⅌ gr. $3.50
Jet Black.....⅌ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ⅌ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....⅌ doz. $1.00
Black Silk, 5 oz. box.....⅌ doz. $0.75
Black Silk, ½ pt. liq.....⅌ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled.....40%
Tinned.....55%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ⅌ doz., $20.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops.....50%
Miller's Falls, No. 3, ⅌ doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, ⅌ doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller each $30.00.....50%
Pelican, ⅌ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ⅌ doz. $6.00
Diamond B, No. 3, case lots..... ⅌ doz. $5.50
Giant No. 1, ⅌ doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, ⅌ doz., 75c.; ⅌ gro., $6.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., ¾ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.80
Inch	1½	1¾	2	2½

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 1, 2 in.... ⅌ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, &c...45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....⅌ doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch...	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—

Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality.....$1.75@2.00
Revolving (4 tubes)..... doz. $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi.....50%
Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co...40%
Tinners' Solid, P., S. & W. Co., ⅌ doz., $1.44.....60%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ⅌ ft. 5½¢
No. 2, Reliable Hgr. Track, ⅌ ft. 7¢
Cronk's:
Double Braced Steel Rail..⅌ ft. 2¾¢
O. N. T. Rail.....2¼¢
Griffin's:
xxx, ⅌ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ⅌ 100 ft. 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ⅌ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T., ⅌ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....⅌ 100 ft. $4.00
Lawrence Bros.:
⅌ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ⅌ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ⅌ ft., 11¢..50%
None Better.....⅌ ft. 3¾¢
Standard.....⅌ ft. 4 ¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common 1 x 3-6 in., $2.25; 1¼ x 3-16, $2.50; 1¼ x 3-16, $2.75.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ⅌ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....⅌ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....⅌ ft. 3¢
Wrought Bracket, 1¼ x 5-16..⅌ ft. 7¢
Swett's Hylo, ⅌ ft. 11¢.....60%
P. L. B. Steel Rail.....⅌ 100 ft. $3.00
No. 0, 1 x 3-16.....⅌ 100 ft. $2.75

Rakes—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ⅌ doz., net.....$4.25
Cronk's:
New Champion Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.....80%
Queen City Lawn, ⅌ doz., 20 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, ⅌ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....⅌ doz. $3.45
Lawn Queen, 24-tooth.....⅌ doz. $3.60
Paragon, 20-tooth.....⅌ doz. $2.75
Paragon, 24-tooth.....⅌ doz. $3.00
Steel Garden, 14-tooth....⅌ doz. $2.40
Malleable Garden, 14-tooth, ⅌ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Boras—I C.....60%
Fox Razors, No. 42..⅌ doz. $20.00
Fox Razors, No. 44..⅌ doz. $20.00
Fox Razors, No. 82, Platina... ⅌ doz. $25.00
} 40% Dis.
Red Devil.....50%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Silberstein.....40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....25%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Japanned, Electroplated and Bronzed.....70&10%

Revolvers—

Single Action.....95¢@$1.00
Double Action, except 44 cal..$1.85
Double Action, 44 caliber....$2.00
Automatic.....$3.45
Hammerless.....$4.00

Riddles, Hardware Grade

16 in.....per doz. $2.25@2.50
17 in.....per doz. $2.50@2.75
18 in.....per doz. $2.75@3.00

Rings and Ringers—Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.00	1.15	1.40 doz.

Rea's Improved Self-Piercing, Copper, 2 in., ⅌ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron.. doz. 70@75¢
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper.....45%
Iron or Steel.....75@75&5%

Bifurcated and Tubular—

Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay No. 65, $0.90; No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..⅌ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....⅌ doz. 65¢
Hinge Adjustable Stay.....⅌ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger: Pure.....lb., 12½¢
Sisal, 7-16 in. diam. and larger: Pure.....lb., 10¢
Sisal, 7-16 in. diam. and larger: No. 2 quality.....lb., 8¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed.....lb., 8¢
Pure.....lb. 10¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed.....lb. 8¢
Pure.....lb. 10¢
Cotton Rope: Best, ¼-in. and larger. 16½@18¢
Medium, ¼-in. and larger. 15½@16½¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread No. 1, ¼-in. & up, lb. 6¼¢
Thread No. 2, ¼-in. & up, lb. 5¾¢
Old Colony Manila Transmission Rope.....⅌ lb 17½¢

Wire Rope—

Galvanized.....37½&2½%
Plain.....45&2½%

Ropes, Hammock—

Covert Mfg. Co.:
Jute.....60%
Sisal.....30&10%
Covert Saddlery Works.....60&5%

Rulers, Desk—

Stimpson & Son:
Boxwood and Maple.....30&10%

Rules—
Boxwood .....60&10&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60@60&10%
Flexifold .....27½&10&10&2½%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Combination .....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 50%
Band .....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ¼ to 1¾.....60%
Crosscuts 50%
Narrow Crosscuts.....50%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 98, 9, 16, d100, 1/0, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....30%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Pence & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws...35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws.....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—
Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades.....25%
Keystone 40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s'
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....25%
Victor Hack Saw Frames.....40%

Scroll—
Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....60%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—
Covert's Saddlery Works.....60&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ⅓ oz. to 4 lbs. .....doz. $5.80
Two Platforms, ⅓ oz. to 8 lbs. .....doz. $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—
Box, 1 Handle.....doz. $2.00@2.25
Box, 2 Handle.....doz. $2.60@2.85
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box, 30@30&10&10%

Screens, Window and Frames—
Air Line Pattern Screens.....60&10%
Flyer Pattern Screens..60&10@60&10&5%
Maine Screen Frames.....40&10&5%
Perfection Screens.....60&10@60&10&5%
Phillips' Screen Frames...60&5@60&10%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼, $3.00@3.25; 1½, $3.50@3.75
Bench, W'd, Beech, doz. 30@30&5%
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99 .....75&15%
Coach, Gimlet Point, list Oct. 1, '99.....75&10%
Hand Rail, list Jan. 1, '81.... 70&10@75%

Jack Screws—
Standard List.....80@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50%
Sargent .....70&10%
Swett Iron Works.....75&10@60&5%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron.... 50@50&10%
Flat or Round Head, Brass.... 50@50&10%

Set and Cap—
Set (Iron).....80%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap.....75%
Hex. Hd. Cap.....75%
Rd. Hd. Cap.....60&10%
Fillister Hd. Cap.....60&10&10%

Wood—
List July 23, 1903.
Flat Head, Iron.....87½&10@..%
Round Head, Iron...85 &10@..%
Flat Head, Brass....85 &10@..%
Round Head, Brass..80 &10@..%
Flat Head, Bronze...77½&10@..%
Round Head, Bronze.75 &10@..%
Drive Screws.....87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
Per doz.
Grass, No. 1, Plain Finish...$6.25
Clipper, Bronzed Webb....$6.50
No. 3 Clipper, Pol'd Webb..$6.75
No. 6 Clipper & Solid Steel.$7.00
Bush, Weed & Bramble, No. 2.$6.50
Grain, No. 1.....$8.25
Bronzed Webb, No. 1.....$8.50
Nos. 3 & 4 Clipper, Grain..$8.75
Solid Steel No. 6.....$9.25

Seeders, Raisin—
Enterprise .....25@30%

Sets—Awl and Tool—
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz., $10.00.....60&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel.....℔ doz sets $9.00

Sets, Nail—
Octagon .....gro. $3.50@3.75
Buck Bros.....27½%
Cannon's Diamond Point, ℔ gro.$12.40%
Mayhew's .....℔ gro. $9.00
Snell's Cor'gated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.℔ gro. $7.50

Rivet—
Regular list.....75@75&10%

Saw—
Aiken's:
Genuine .....50&10%
Imitation .....50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate 20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.60.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal Cross Cut.....℔ doz. $8.00
Royal, Hand.....℔ doz. $4.50
Taintor Positive.....℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 20..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s.....60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co.....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz.....$1.50
Mounted Kitchen Sand Stone, ℔ doz.....$1.50
Natural Grit Carving Knife Hones, ℔ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz.....$1.50
Quick Edge Pocket Knife Hones, ℔ doz.....$2.50

Skate—
Smith & Hemenway Co.....20%

Shaves, Spoke—
Iron .....doz.$1.10@1.25
Wood .....doz.$1.75@2.25
Bailey's (Stanley R. & L. Co.)....45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—
Cast Iron..	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Sheep, 1900 list.....50&10%

Tinners' Snips—
Steel Blades.....20&5@20&10%
Steel Laid Blades.....40&10@50%
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Forged Handles.....20%

Pruning Shears—
Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00.....25%
Disston's Pruning Hook, ℔ doz. $12.00 .....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P. S. & W. Co.....33⅓%
Wilkinson's Hedge, 1900 list.....50&10%
Wilkinson's Lawn and Border.....50%

Sheaves—Sliding Door—
Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list .....70&10%
Reading 40%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—
Reading list.....40%
R. & E. list.....33⅓%
Sargent's list.....10&10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge .....65&10%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.25&10%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge .....20&5%
Climax, Union, League, New Rival, 10 and 12 gauge.....25&5%
Climax, Union, League, New Rival, 14, 16 and 20 gauge.....20&5%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Cometa, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron .....per keg $4.00
Steel .....per keg $3.75
Burden's, all sizes.....℔ keg $3.90

Shot—
Drop, up to B, 25-lb. bag....$1.80
Drop, B and larger..... per 25-lb. bag, $2.05
Buck, 25-lb. bag.....$2.05
Chilled, 25-lb. bag.....$2.05

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle.....$2.75@3.00
Wood and Mall, D. Handle, $3.25@3.50

Sieves and Sifters—
Hunter's Imitation..... gro.$9.50@10.00
Hunter's Genuine..... per gro. $12.00@12.50
Buffalo Metallic Blued, S. S. Co., ℔ gr.:

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz.. $2.00.....20%

Sieves, Seamless Metallic
Per dozen.

Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in....60&5%
20 x 40 to 24 x 50 in.....55%
24 x 60 to 24 x 120 in.....35%
Barnes' low list:
Up to and including 20 x 36 in....60%
20 x 40 to 24 x 50 in.....55%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron.....80@80&10%
Steel .....40@40&10%

Slates, School—
Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless.. 60&5 tens
Victor A, Noiseless.60&5 tens 45%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German .....40@40&10%
Covert Mfg. Co.:
Derby .....30&2%
High Grade.....
Jockey 35%
Trojan 45%
Yankee .....30&2%
Yankee Roller.....30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Harness Snaps, 1 inch.....60&5%
Swivel Snaps.....60%
Swivels 50%
Sargent's Patent Guarded....66⅔&10%

Snaths—
Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality.....50&10@60&5%
Cheap .....60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—
German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—
Teas .....per gro. 45@50¢
Tables.....per gro.$0.50@$1.00

Springs—Door—
Chicago (Coil).....40&10%
Gem (Coil).....25%
Pullman (Coil).....25%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....℔ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.—
1¼ in. and Wider: Per lb
Black .....4@4¼¢
Half Bright.....4@4¼¢
Bright .....4½@4¾¢
Painted Seat Springs:
1¼ x 2 x 26.....per pr. 42¢
1¼ x 3 x 28.....per pr. 70¢

Sprinklers, Lawn—
Enterprise .....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24.....30%
Pleuger & Henger Mfg. Co.:
Cactus 70%
Japanese 75%
Nationals 65%

Squares—
Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron.. } *75&5@75&10%*
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind.....lb. 6@6½¢
Electricians', Association list.. 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples..... per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros.'.....30%
C. & A. Hoffmann's.....40%

Steelyards—....30@30&10%

Stocks and Dies—
Blacksmiths' .....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stoners, Cherry—
Enterprise .....25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum Axe, Single or Double Grit.....60%
Gem Corundum Slips.....60%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co., 1904 list: ℔ D.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
33⅓%
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%

Hindostan No. 1, R'g'lar, ₩ lb 8¢
Hindostan No. 1, Small, ₩ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in., ₩ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
} 33⅓%

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₩ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots, ₩ gro. $9.00
One gross or more, ₩ gro. $7.20
Lots of 10 gross or more, ₩ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S., ₩ gro. $12.00
Lamoille S. S., ₩ gro. $11.00
White Mountain S. S., ₩ gro. $9.00
Green Mountain S. S., ₩ gro. $6.00
Extra Indian Pond S.S., ₩ gro. $7.50
No. 1 Indian Pond S.S., ₩ gro. $7.00
No. 2 Indian Pond S.S., ₩ gro. $4.50
Leader Red End S. S., ₩ gro. $4.50
Quick Cut Emery, ₩ gro. $10.00
Pure Corundum, ₩ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
} 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers, ₩ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ₩ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket, doz. $1.60
Excelsior Stretcher and Tack Hammer Combined, ₩ doz. $6.00 20%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ₩ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $24.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

NOTE.—Rebates: 50c *per dozen on three-dozen lots;* $1 *per dozen on five-dozen lots;* $2 *per dozen on ten-dozen lots;* $2.50 *per dozen on twenty-five-dozen lots.*

Streator Metal Stamping Co.:
Model E, Sanitaire, ₩ doz $25.00
Model A, Sterling, ₩ doz. $25.00
Model B, Sterling, Nickeled, ₩ doz. $23.00
Model B, Sterling, Japanned, ₩ doz. $21.00
Model C, Sterling, ₩ doz. $21.50
Model D, Sterling, ₩ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks 90&37½%
American Cut Tacks 90&37½%
Swedes Cut Tacks 90&37½%
Swedes Upholsterers' Tacks 90&50%
Gimp Tacks 90&50%
Lace Tacks 90&50%
Trimmers' Tacks 90&37½%
Looking Glass Tacks 65%
Bill Posters' and Railroad Tacks, 90&50%
Hungarian Nails 85%
Finishing Nails 70%
Trunk and Clout Nails 80&5%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&6 *or* 7 *tens*
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, R. M. W. Co.	30-gal. $3.40
Emerald, R. M. W. Co.	60-gal. $4.25
Queen City, R. M. W. Co.	30-gal. $3.65
Queen City, R. M. W. Co.	60-gal. $4.50

Tapes, Measuring—

American Asses' Skin 50@—%
Patent Leather 25@30&5%
Steel 33 1-3&5%
Chesterman's 25@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c. 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ₩ doz. $13.25
No. 3, Rat, ₩ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ₩ doz. $5.25; case of 72 ₩ gro. $4.70 doz.
No. 4, Mouse, ₩ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ₩ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I. 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ₩ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ₩ gro. $6.00
Never-Break Steel Garden Trowels.. ₩ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks, ₩ doz. $16.00
Grocery, ₩ doz. $15.00
Daisy Stove Trucks, Improved Pattern, ₩ doz. $18.50
McKinney Trucks, each $10.00
Model Stove Trucks, ₩ doz. $18.50

Tubs, Wash—*No. 1 2 3*

Galvanized, per doz. $4.25 4.75 5.25
Galvanized Wash Tubs (R. M. W. Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine:	BC.	B.
No. 9, ¼ and ½-lb. Balls	.22	24¢
No. 12, ¼ and ½-lb. Balls	.18	20¢
No. 18, ¼ and ½-lb. Balls	.16	18¢
No. 24, ¼ and ½-lb. Balls	.16	18¢
No. 36, ¼ and ½-lb. Balls	.15	17¢

Chalk Line, Cotton ½-lb. Balls 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 10@18¢
Cotton Wrapping, 5 Balls to lb., acording to quality 11½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 13@14¢
American 3-Ply Hemp, 1-lb. Balls 13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 31½¢
India 3-Ply Hemp, 1-lb. Balls 31½¢
India 3-Ply Hemp, 1½-lb. Balls 7@8¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 9@10¢
Mason Line, Linen, ½-lb. Bls. 46¢
No. 26 Mattress, ¼ and ½-lb. Balls 37¢
Wool, 3 to 6 ply. B 6¢; A 6½¢

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch 50%
Solid Jaw 50%
Merrill's 20%
Millers Falls 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Sargent's 40%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg Co, Double Swivel. 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ₩ doz. $30 25%
Perfection Saw Clamps, ₩ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%
Williamson Mfg. Co. Double Swivel Combination Pipe 40&5%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25
} *Dis. 15%*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 55%
Ground 60%
Plain or Unground 65%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc; ₩ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 80&10@80&10&10%
Patent 90@90&5%
Coil:

	¼	1	1½	1¼ *Inch.*
	10¢	11¢	12¢	13¢ *per box*

Iron or Steel—

Size bolt 5-16 ⅜ ½ ⅝ ¾
Washers $5.70 4.80 3.50 3.30 3.10
The above prices are based on 5.70¢ off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots per lb. 1¾@2¢

Weather Strip—

Flexible Felt—

Lined, per 100 ft., $2; $3; $4. 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co. 40&2%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District $27.50@$28.00
Southern Territory $20.00@$23.00
Western and Central Districts $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80%
10 to 18 80&2½%
19 to 26 80&7½%
27 to 36 80&2½%
Galvanized:
6 to 9 75&5%
10 to 14 75&7½%
15 to 16 72½&10&2½%
19 to 26 75%
27 to 36 72½%
Coppered:
6 to 9 75&5%
10 to 14 75&7½%
15 to 18 72½&10&2½%
19 to 26 75&10&5%
27 to 36 75%
Tinned:
6 to 14 75&10&2½%
15 to 18 75&7½%
Annealed, Steel and Tinned, on Spools 70&10&10@70&10&10&10%
Brass and Copper on Spools 60&5@60&10&5%
Brass, list Feb. 26, '96 15%
Copper, list Feb. 26, '96 25%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, '03 90&25%
Brass Cup Hooks and Brass Screw Hooks 85&10%

Wire Cloth and Netting—

Galvanized Wire Netting 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural 75&10@75&10&10%
Alligator or Crocodile. 70&10@75%
Baxter Pattern S Wrenches 70&5@70&10%
Drop Forged S 45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ₩ doz. $6.25
Elgin Rethreading Attachment, one die, ₩ doz. $6.25
Elgin Extra Dies, ₩ doz. $3.00
Elgin Extra Jaws, ₩ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ₩ doz. $2.10
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
Solid Handles, P., S. & W. 50&10@60
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₩ gross, $7.50; ₩ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ₩ doz. $48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet per 100 lbs., $8.25@8.50

For the Table of "Current Metal Prices" see the First Issue of Every Month.